PAPER TRADE JOURNAL

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

Established 1886

Guidance

"A journey of a thousand miles begins with one step."

CONFUCIUS

. . . and may we add, that such step properly taken will give assurance of a favorable journey in the right direction.

GOTTESMAN & COMPANY

—INCORPORATED—

WOOD PULP

22 EAST 40th STREET NEW YORK, N. Y.

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MARCH
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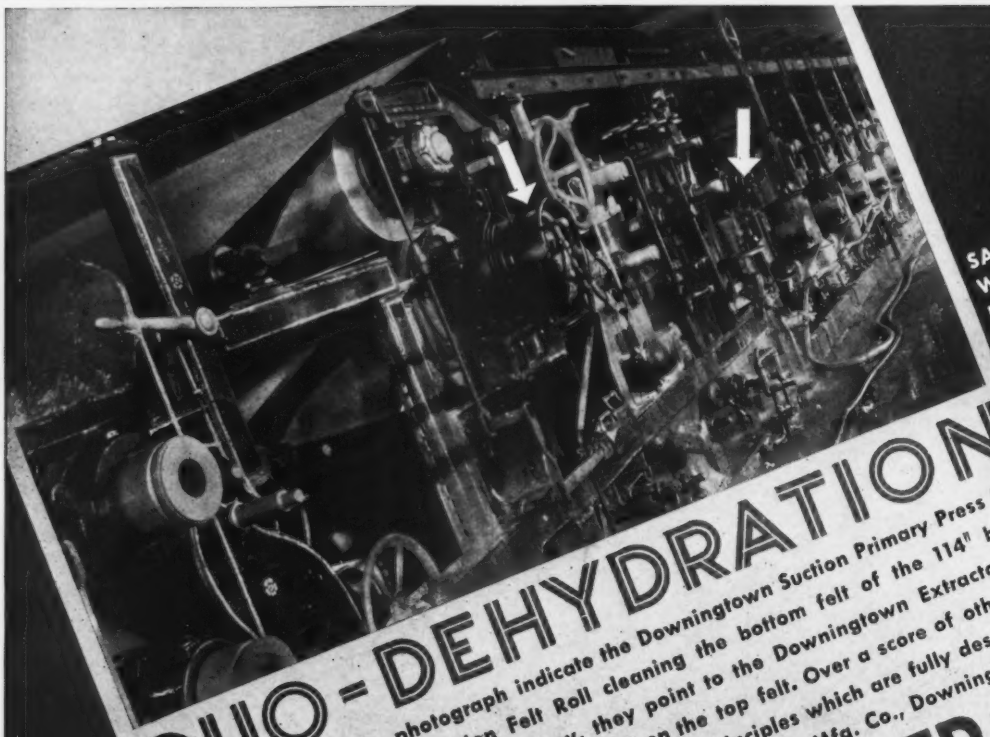
No. 10

DOWNINGTOWN



SAFE WATER REMOVAL BY EXTRACTION

DUO-DEHYDRATION

Arrows in the above photograph indicate the Downingtown Suction Primary Press Roll and the Downingtown Suction Felt Roll cleaning the bottom felt of the 114" board machine at Monroe, Michigan. Below, they point to the Downingtown Extractor Unit and another Downingtown Suction Felt Roll on the top felt. Over a score of other mills are using these Downingtown Duo-Dehydrating Principles which are fully described in our Bulletin No. 119. Send for it today. The Downingtown Mfg. Co., Downingtown, Pa.

CONSOLIDATED PAPER CO.

STRAIGHT LINE WATER REMOVAL BY SUCTION

No Board Machine is Modern *Without* DUO-DEHYDRATION

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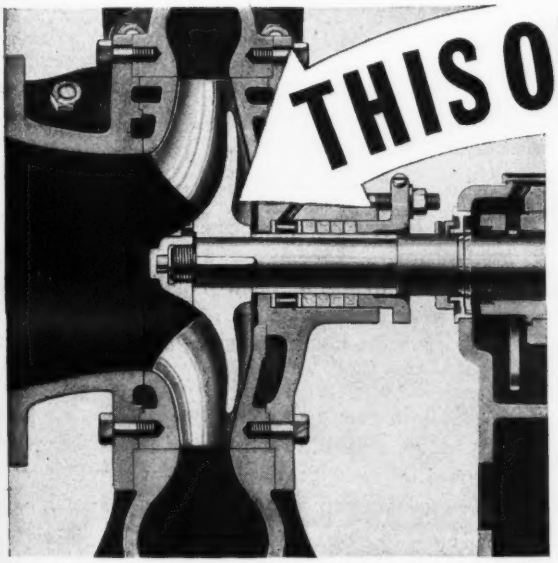

THIS ONE DETAIL PREVENTS CLOGGING

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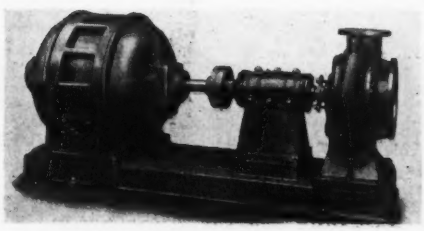
Heavy stock hasn't a chance to pack up behind the impeller of a Warren stock pump. For Warren's self-cleaning, non-binding impeller has special vanes to prevent clogging—to keep stock on the move continuously.

What's more, Warren shafts are extra heavy to prevent vibration and deflection. Bearings are oversize to minimize wear, reduce maintenance. Inlets are extra large to insure heavy stock reaching the impeller. All these Warren details are calculated to maintain top notch service and insure rock bottom maintenance year after year.

Bring your stock handling problem to Warren.

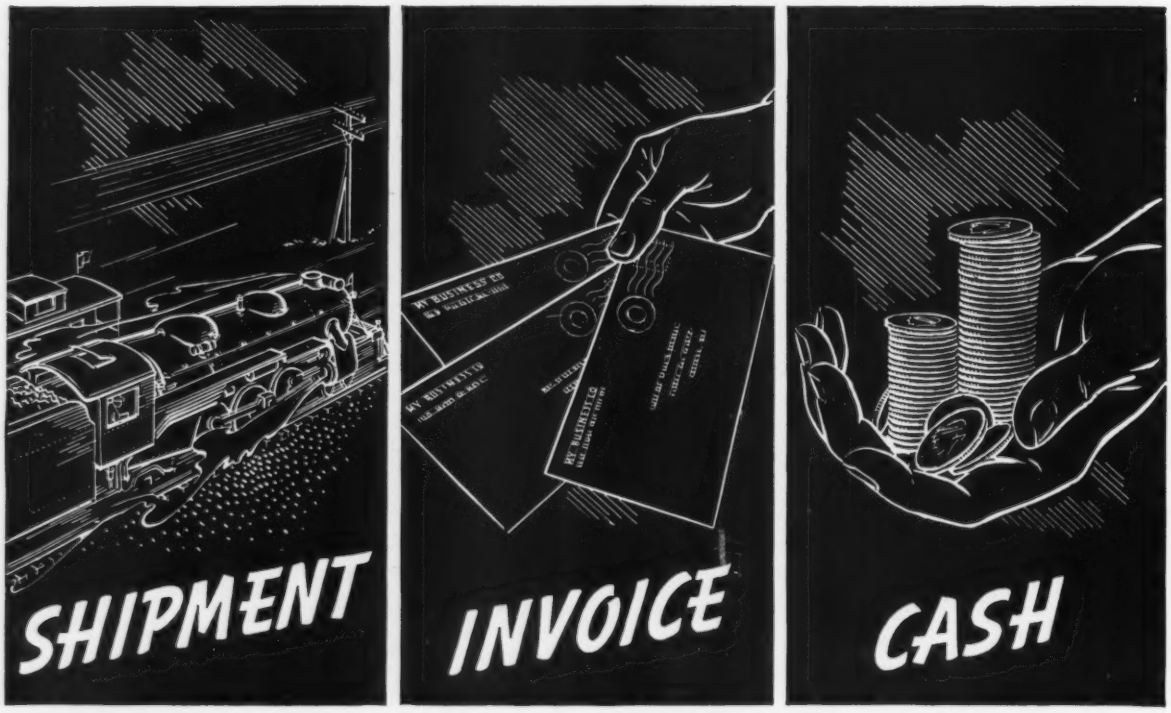
WARREN



PUMPS

WARREN STEAM PUMP COMPANY, INC.

WARREN, MASSACHUSETTS



and PROTECTION against Credit Loss

"YESTERDAY our shipments to regular customers totaled around $60,000. About half of these accounts will take advantage of our discount terms. The others will wait until their bills mature. Yet, without any delay, I have the full cash proceeds in my bank, ready to go to work for me again."

That is a simple description of how Commercial Credit Company's open account financing is making the money and credit problem easy for hundreds of clients.

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They ship . . . bill the customer . . . send us duplicate invoices . . . and get their money immediately. It's such a safe, sane and easy way to keep your credit rating high and your cash position strong, you should certainly investigate it.

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PAPER TRADE JOURNAL

Reg. U. S. Pat. Off.

PAPER

SIXTY-SIXTH YEAR

PULP

Established Feb. 17, 1899
Consolidated Nov. 16, 1899
with Paper Trade Journal.

Vol. CVI, No. 10 Thursday, March 10, 1938

Established Sept. 21, 1919
Consolidated Feb. 19, 1925
with Paper Trade Journal.

World Makes News Print Record in 1937

Production for the Year Was 8,971,000 Tons as Compared With 8,215,000 Tons in 1936, Making an Increase of 9 Per Cent—Canada Supplied 41 per cent, Great Britain 12 Per Cent and United States Only 11 Per Cent.

By R. S. Kellogg, Sec. News Print Service Bureau

World production of news print paper in 1937 is computed to have been 8,971,000 tons, an increase of 9 per cent from the 8,215,000 tons produced in 1936 and of 43 per cent or 2,695,000 tons from the low point of 6,276,000 tons in the depression year of 1932. The average annual world output of news print paper for the past ten years has been approximately 7¼ million tons as shown in the accompanying table. While it has been necessary to supply a few small estimates, the totals are substantially correct. The compilation of these annual figures, beginning with the year 1927, has been made possible through direct reports from all North American mills to the News Print Service Bureau, the hearty cooperation of trade organizations elsewhere, and valuable assistance from the Bureau of Foreign and Domestic Commerce in Washington.

U. S. Produces Only 11 Per Cent

It will be noted that the 8,971,000 tons of news print made last year was supplied to the extent of 41 percent by Canada, 12 percent by Great Britain, 11 percent by the United States, 6 percent by Germany and about 5 percent by Finland, France and Japan. Bringing the various countries together, 55 percent of the world output in 1937 was made by North American and 45 percent by European producers. Experiments and projects occasionally reported in the making of news print elsewhere have not yet materiailzed to any appreciable extent.

New all-time high records in the production of news print were run up last year in Canada, Great Britain, Finland, France, Japan, Newfoundland, Sweden and Norway, with slight changes in the minor producing countries. Canadian output of news print paper in 1937 of 3,645,000 tons was 14 per cent more than in 1936 and 1,731,000 tons or 90 per cent more than the low figure of 1,914,000 tons made in 1932. Canada's ten-year record has been approximately 2,600,000 tons annually.

Great Britain Reports 1,033,000 Tons

Great Britain reported 1,033,000 tons of news print made in 1937, an increase of 29,000 tons over 1936, the latter year being the first time in which news print production of this country got up to a million tons. Recent growth of news print production in Great Britain has been substantial, with a gain in every year since 1930.

The United States output of 946,000 tons in 1937 was the same as in 1933 but substantially under the years preceding 1933. As a matter of fact, we have to go back to 1926 for the peak of United States news print production of 1,684,000 tons. There are some indications that United States news print is stabilizing at somewhat less than a million tons annually and that of Great Britain is settling down to a little more than that figure.

No Substantial Change in Germany

There has been no substantial change in German news print for many years, and the average for the past decade has been slightly more than half a million tons.

Finland has rapidly come to the front as an important manufacturer of news print paper. The 459,000 tons reported last year was an increase of 14 per cent over the 1936 output and a little more than double the 1930 production. There has been no break in the annually increasing output of news print paper in Finland since the industry in that country got well under way.

(Cont'd on page 22)

Lest an advertisement in the March 3rd issue create an erroneous impression, the Paper Trade Journal wishes to advise its readers that the Pulp Sales Corporation of 230 Park Avenue, New York City, is the exclusive Sales Agent for the Finnish Cellulose Association and the Finnish Wood Pulp Union. The Paper Trade Journal regrets exceedingly the insertion of this misleading advertisement.

Everest Expects Normal Business by June

Manager of Marathon Paper Mills Predicts Gradual Recovery With Conditions Near Normal in Second Half Of Year and Criticizes Wagner Labor Act as Indefinite—To speak at Lake States TAPPI Meeting March 8.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., March 7, 1938—Gradual recovery with conditions approaching near to normal by next June is seen by D. Clark Everest, vice-president and general manager of the Marathon Paper Mills Company, Rothschild, Wis., who gave his views in an address last week at the annual meeting of the Chamber of Commerce at Wausau, Wis.

"We have plenty of men, money and markets," said Mr. Everest. "All we lack is confidence. Given the assurance that recovery legislation will take precedence over reform legislation and that when a policy favorable to business is announced it will be adhered to, business will go ahead. Favorable tax legislation will do much to stimulate business. Real action indicating a favorable attitude toward business may start us on the upgrade as quickly as we hit the skids last fall.

"It is a dizzy whirl of events in business today. Things move faster than ever before. Witness the nose dive in business last fall. As far as securing business for immediate shipment was concerned, the crash in 1929 was a Sunday school picnic compared with it. Gradually business is coming back. We have present all the elements of good business.

"Recovery, however, is expected to be gradual. By next June we will have reached a rate of activity of between 80 and 85 per cent of last year.

"Business has been unable to keep up with new legislation which is continually being thrust upon us. We just about get one thing working in accordance with the law, when a new law is dropped in our laps and we start all over again. One half our time, which should be devoted to making and selling goods and keeping plants going, is taken up finding out about the conditions under which goods can be made and sold and under what restrictions we must sell them. It is a new headache from day to day and no aspirin."

Wagner Labor Act Called Indefinite

Delving into the matter of labor relations, Mr. Everest criticized the Wagner Labor Act because it is "indefinite." "There is one thing sure," he said, however, "and that is that the National Labor Relations Board is here to stay and the quicker people realize it and conform to the law, the less difficulties they will have. In my opinion this law will eventually be changed. As it stands today, only employes may submit their complaints. Thinking people in the various labor organizations agree that if this board is to decide all questions in labor matters, employers should also have the right to submit their complaints to the board at least for arbitration.

Contribution of Marathon Mills to Community

What the Marathon Paper Mills Company has meant to the community was explained by Mr. Everest to the effect that during 29 years of operations, the company has paid to preferred stockholders, nearly all citizens of the local community, dividends amounting to $907,000, and to common stockholders, $3,491,000, or a total of $4,398,000. During the same period it has paid wages and salaries at Rothschild of $22,016,000. In 1927 it acquired the Menasha Printing Carton Company plants at Menasha, Wausau and Ashland, Wis., and since that time has paid out for wages and salaries in these plants of $17,217,000. A sawmill at Ironwood has paid $333,000 in wages, bringing the grand total of plant wages to $39,567,000. There has also been spent in special construction work and hauling rock, $170,000, and for cutting and delivering pulp wood, $11,351,000, making an over-all total of $51,088,000 spent in Wisconsin and Northern Michigan.

Stockholders have received $1.00 for each $12 paid in wages. The speaker also pointed out that the investment at Rothschild in property before depreciation is $8,630 for each of 724 persons employed, and does not include working capital and timber reserves to keep these men working.

Speakers at Lake States TAPPI Meeting

Two speakers are scheduled for the March meeting of the Lake States Section of the Technical Association of the Pulp and Paper Industry at a dinner Tuesday evening, March 8, at Conway hotel, Appleton, Wis. E. B. Beede, service engineer for the Foxboro Company, Bristol, Conn., will explain the application of Verigraph moisture controls to the drying of paper. R. S. Barber, Chicago, will present the problem of heat control, and will show a talking film, "Heat and Its Control."

A. F. of L. Would Replace Company Union

Further efforts by A. F. of L. unions to organize employees of the Kimberly-Clark Corporation, Neenah, Wis., now operating their own independent union, were made at a meeting at Menasha, Wis., Sunday afternoon, March 6. The meeting was called by Local 170 of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, within whose membership are some of the Kimberly-Clark Employees. Efforts were made to show the advantages of A. F. of L. as a collective bargaining agency.

G. W. Mead Returns from Florida

George W. Mead, president of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., returned last week from his winter home at Miami Beach, Fla., to spend two or three days in business conferences. He also inspected the new No. 5 coated paper machine recently placed in operation at the main mill. He expressed considerable satisfaction over the new installation.

College Student Selected by Paper Institute

Alan Adrian, a student who will graduate from Lawrence College, Appleton, Wis., has been selected as one of seventeen new enrollees at the Institute of Paper Chemistry, Appleton, Wis., next fall. He resides in Appleton.

Prospects of Lake Sulphite Pulp Co. Good

Special Committee Formed in Montreal to Represent Shareholders of Lake Sulphite Pulp Co.—Good Progress Made on Construction of 225 Ton Mill — Over 4½ Million Dollars More Required to Complete Project.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., March 7, 1938.—Shareholders of Lake Sulphite Pulp Company, Limited, in receivership, at a special meeting held in Montreal, elected a committee of seven to represent the shareholders as a group in all matters pertaining to the company as long as it shall remain in receivership. The following were elected to the committee: G. G. Blackstock and Peter Campbell, K.C., of Toronto; Marius Doye, N. C. Polson. J. McL. Stephens and G. S. Burden, of Montreal, and H. Freeburne, of Hamilton. Present at the meeting or represented by proxy were holders of 110,344 shares, out of an issued total of 150,007 shares. W. B. Scott, K.C., was chairman of the meeting, as John Stadler, president of the company, relinquished the chair in order to participate in the discussion.

Good Progress Made in Building Pulp Mill

From the discussion preceding the appointment it appears that good progress has been made on the construction of the mill, which has a potential capacity of 225 tons of sulphite pulp a day, and that if financial arrangements were forthcoming it could be completed in two or three months. The company has 25 customers, at prevailing market prices, for 4,446 tons of bleached sulphite per month, Mr. Statler stating he was informed by the company's sales agents, that as long as there was no undue delay in completing the construction and starting deliveries the contracts would stand. Sufficient wood has been cut for the first year's operations.

Outlay of $4,700,000 Required

Shareholders were told that at least $4,700,000 would be required to complete the project, and of this the amount required to pay what was owing to manufacturers and other trade creditors was around $3,200,000.

The reasons for the bankruptcy of the company were stated to be excess of costs over estimates, contributing factors being a change in the location of the mill, difficulty of finding good foundations for building, enlargement of the mill during the designing period, and purchase of the Nipigon Corporation. As to costs ol labor it was stated men who had been on relief were employed and the labor was "the most inefficient Mr. Sweezy ever saw. With respect to the purchase of the Nipigon Corporation, which was not originally contemplated, that was done at a cost of $500,000, as the Nipigon property would mean the purchase of wood on a basis of 50 cents a cord cheaper from the Lake Sulphite limits.

While the mill is situated in Ontario, its chief stockholders are in Montreal. Errors of judgment were admitted, but Mr. Statler told the meeting that the situation, though disappointing, was by no means disastrous.

Acer of Dryden Co. on Business Outlook

At the annual meeting of the Dryden Paper Company in Montreal, President J. H. A. Acer reported that pulp sales had shown considerable retraction, while paper sales had been picking up of late.

Practically all the pulp by the company is shipped to the United States, consequently the company is largely dependent on conditions in that country. Much depends now on what President Roosevelt will do, the president stated.

The paper division has been picking up lately after several months of decline, he went on to say. In 1937 sales made a new record high, exceeding those of 1929.

The financial statement for the year ended December 30 last, was approved by the shareholders and directors re-elected.

Fernandina Pulp Mill Delayed

The Fernandina Pulp and Paper Company, from its office in the Hoyt Building, Seattle, Wash., under date of February 28, 1938, has issued the following statement which is self explanatory:—

"In view of general business conditions, particularly reduced production schedules which have recently been in effect in the principal pulp consuming fields such as paper, rayon, staple fiber and cellophane manufacture, the management of Rayonier Incorporated has decided to delay construction operations at the plant now being built by its wholly owned subsidiary, Fernandina Pulp and Paper Company, at Fernandina, Fla. As a consequence, this mill will not be completed until some time this coming fall instead of earlier in the year as previously contemplated."

St. Joe to Buy Thames River Mill

E. Victor Donaldson, president of Robert Gair Company, Inc., New York, announced last week that the St. Joe Paper Company, of Port St. Joe, Fla. had agreed to purchase the Thames River paperboard mill of Robert Gair Company, Inc., located at New London, Conn., and that Robert Gair Company, Inc had agreed to purchase from the St. Joe Paper Company, over a period of years, a substantial tonnage of Kraft container board, to be manufactured at the new mill of the St. Joe Paper Company, in Florida. This will not affect the manufacture of shipping containers by Gair.

Government Paper Bids

WASHINGTON, D. C., March 9, 1938—The Government Printing Office has received the following bids for 10,000 pounds of white sulphite writing paper; Reese & Reese, Inc., 6.88 cents; Aetna Paper Company, 7.64 cents; Paper Corporation of U. S., 7.63 cents; Barton, Duer & Koch Paper Company, 6.93 cents; R. P. Andrews Paper Company, 7.63 cents; Stanford Paper Company, 7.58 cents; and Cauthorne Paper Company, 6.90 cents.

S. A. P. I. Announces Employment Service

Salesmen's Association of the Paper Industry Has Announced Change in Laws of Association to Extend Its Activities — The Newly Formulated Plan For Employment Service Is Announced By President J. T. Burruss.

The Salesmen's Association of the Paper Industry has announced that a plan has been formulated to extend the activities of the Association. The incident leading to the inauguration of an employment service occurred last summer at a luncheon meeting in New York. At that time George Sisson, 2d, of the Raquette River Paper Company, asked some pertinent questions as to the purpose of the Salesmen's Association. The members present were of the opinion that if a former president of the American Paper and Pulp Association was interested in such information it should be made available to others. After several meetings the laws of the Association were condensed to the seven purposes and several accomplishments as follows:

Purpose and Accomplishments

The Salesmen's Association of the Paper Industry is affiliated with the American Paper and Pulp Association, with two divisions, one East and one West. Its officers, except the Secretary-Treasurer, receive no compensation whatsoever; none receive travelling expenses.

Its members are actively employed in the sales or sales promotion work of the Paper Manufacturing Industry. Luncheon meetings are held each Monday in New York and Chicago.

Its purposes are:

(1) To raise the efficiency of sales methods by proper educational information, advanced through the medium of a Weekly Bulletin and speakers of renown on subjects of importance to the Paper Industry, at weekly luncheons.

(2) To be genuine in their efforts to help promote the progress of the Paper Industry.

(3) To effect increasing new uses and sales of paper and paper products, and to industriously protect and maintain present standards.

(4) To bring about a wider personal acquaintance among its members.

(5) To effect and promote the development of the highest sales ethics in the Paper Manufacturing Industry.

(6) To have the welfare of its members at heart and, at all times, to be ready to assist members with their problems.

(7) To assist unemployed salesmen who are, or have been, members of our Association in securing new positions, and to help mill executives in locating experienced paper salesmen for vacancies they may have.

Organized in 1920, its membership has steadily increased. Out of a specially selected list of member-mills in the American Paper and Pulp Association, 132 mills are represented by 293 active members. The Association's Eighteenth Annual Meeting and Luncheon occurred last February twenty-second, at which more than twelve hundred guests and members were present.

The Import Committee, one of the most valuable assets to the American Paper and Pulp Association and to every mill organization in this country, was conceived and organized by the Salesmen's Association of the Paper Industry. At present our Association is actively working, in conjunction with the Trade Customs Committee of the American Paper and Pulp Association, on unified Trade Customs for the Industry.

For those interested in sports there are, during the summer, monthly golf tournaments, which have proven highly successful and have done much to create a fine fellowship among the members and guests. During the winter months the Eastern Division is represented in the Paper Industry Bowling League.

The new employment service of the Association as announced by President J. T. Bunures follows:

Salesmen's Employment Service

"In order to be of greater service to its members and to the Paper Industry, the Salesmen's Assn. has decided to establish and operate a placement service for unemployed members seeking sales positions. A standard form of questionnaire will be prepared, including standard questions such as age, education, family, experience, etc. This list of applicants with details regarding their qualifications, service, and etc. will be available to the salesmen's executives of paper mills without charge except to cover actual expense incurred in each particular case. The Salesmen's Assn. will be glad to hear from any sales executives desiring to receive information regarding salesmen seeking positions. Address all requests for information regarding this service to Dr. E. O. Merchant, Secretary-Treasurer, Salesmen's Assn. of the Paper Industry, 122 East 42nd street, New York, N. Y."

Review of Insulbrix Bulletin

Quigley Company Inc., 56 W. 45 street, New York has just issued an 8-page bulletin describing the important advantages obtained by use of Insulbrix in hundreds of installations. Insulbrix are light weight, low heat storage insulating fire brick, which combine the advantages of a high refractory and an efficient insulator of low heat storage capacity. Insulbrix are used for direct exposure to flame and gases, in boiler furnaces, ovens, kilns and other high temperature equipment.

They supersede use of thick walls of heavy refractories which are sluggish to heat, slow to respond to load variations and scatter costly B.t.u. to the air. The important advantages of Insulbrix use are fuel, time and labor saving, increased production, higher efficiencies and lower operating costs.

BELOIT

RUBBER-COVERED SUCTION ROLLS

Eliminate and Improve

1. Marking
2. Crushing
3. Shut-Downs
4. Felt Troubles
5. Pick Ups
6. Finish
7. Quality
8. Felt Life
9. Production

BELOIT IRON WORKS PAPER MACH'Y BELOIT, WIS., U.S.A.

The *Beloit* Way is the *Modern* Way

BELOIT IRON WORKS
Beloit, Wis., U. S. A.

Chicago Reports Paper Market Less Firm

Continuation of Comparatively Good Volume of Business Complicated by Weakness in Prices—Straw From Farms as Source of Material — J. W. Butler Co. Appoint Five Vice-Presidents — Other Late Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., March 7, 1938. — Despite a continuation of comparatively good volume, several factors of a more or less disquieting nature are topics of conversation in Chicago paper circles this week. As was more or less expected, certain lines experienced a noticeable slackening in price bases according to experienced observers who pointed out such a condition in sulphite lines in general. Inasmuch as any material pick-up should dispel any serious situation, local markets are doing a lot of watching but concentrating on increasing business. Kraft papers were also reported as less firm in view of the sulphite pulp situation. Groundwoods were stated to be fair with the undertone still comparatively favorable. Newsprint markets were little changed and demand was reported fair. Book and cover papers gave no indication of any market change, volume running in narrow channels and the buying market showing little responsiveness undoubtedly because of the general uncertainty in the entire business picture. Waste papers continued undeniably weak despite recent efforts to bolster up the situation resulting from some evidence of better buying.

Butler Appoints Vice-Presidents

The J. W. Butler Paper Company, Chicago, pleased over the national recognition given to George C. Cobean, president, as the newly elected president of the National Paper Trade Association, recently announced the appointment of five new vice presidents. The company, brought to Chicago in 1848, has made the following changes: C. W. Kirtley, formerly assistant manager, is to be vice president and general manager; J. C. Allen is now vice president and sales manager while H. B. Law, C. G. Foster and Gordon McCloud have also been appointed vice presidents of the rapidly expanding concern.

"Chet" Spaulding in New Post

Of considerable interest to Chicago is the news that C. A. "Chet" Spaulding, for over six years assistant secretary of the National Paper Trade Association, is to be the sales manager of the Crossett Paper Mills. Mr. Spaulding will handle his new executive tasks from the Chicago offices of the company which makes kraft wrappings and bag paper and board. As assistant secretary of the N.P.T.A. Mr. Spaulding was a frequent visitor to Chicago and his many friends will be happy to learn that he is to make Chicago his headquarters in his new connection with the Crossett organization.

Chicagoans Honored in Association Elections

The selection of G. C. Cobean as president of the N.T.P.T.; of J. H. Coy, Sr., as President of the Groundwood Association and of Jack Burrus of the Albemarle Paper Company as president of the Salesmen's Association of the Paper Industry, all elections taking place at the recent N.P.T.A. meetings in New York City, were highly pleasing to the many friends of these gentlemen in the Chicago and midwestern territory. All three are fully cognizant of the importance of coordinated effort and of the necessity for eliminating petty jealousies and animosities to work for the common good of the industry

Paper Industry Report of Federal Reserve

The paper and printing industry in the seventh Federal Reserve district gave a good account of itself as of January 15 and in comparison with other industries in the "Industrial Group" which recounts wage and earnings conditions in Wisconsin, Michigan, Illinois, Indiana and Iowa. For the week of January 15, 1938, the 703 paper and printing firms in the district reported a total of 74,033 wage earners and earnings of $2,063,000 representing a decline of 4.4 per cent in wage earners and of 3.4 per cent in earnings for the period as compared to December 15. The total manufacturing, ten groups, showed a decline of 12.9 per cent in wage earners and 19.5 per cent in earnings for the same period.

More Paper Stock From Farms

Echos of the period when Illinois factories were endeavoring to utilize farm products to make paper were heard this week when the news circulated locally that paper made from straw and waste farm material "that can be sold drastically below the present market level" would be on the market within three or four months. The statement came from F. W. Hochstetter who is reported to have recently announced a new process for converting fibrous plants—from 3 inch weeds to corn stalks—into high grade paper. The Pittsburgh doctor is reported to be waiting for patents covering his invention which he says will make paper less expensive than that made recently from slash pine of the southern states.

S.A.P.I.'s Announce Committees

One of the first acts of John Diggs, Mosinee Paper Mills and newly elected vice president of the midwest division of the Salesmen's Association, was to announce the personnel of standing committee chairmen for the coming twelve months. The golf chairman for the coming year, a highly important office in the task of binding the salesmen into a social group, is to be Graham Olson of the American Writing Paper Company. Inasmuch as the golf chairmanship job has grown to large proportions within recent years, the S.A.P.I.'s decided to appoint an assistant golf chairman in the person of the energetic George Crafts of the Eastern Manufacturing Company. Other committee appointments are as follows: Membership, another term for H. E. Engel, Central Paper Company; Social activities, Ben. K. Babbit, Brown Company; Educational Chairman, Courtney Reeves, Allied Paper Mills and Henry D. Fralick, International Paper Company, assistant chairman.

Canadian Mill Managers Talk on Newsprint

F. A. Morris of Minnesota & Ontario Co. and R. A. McInnes of Anglo-Canadian Pulp & Paper Mills Comment on Newsprint Situation—Provincial Mills Mark Employee Record—Great Lakes Paper Elect Officers.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., March 7, 1938—"Canada is in a better position than other countries, no matter what happens in the political situation", Robert Alexander McInnes, general manager of the Anglo-Canadian Pulp and Paper Mills, Limited, stated in an address before the Toronto Canadian Club, in Toronto last week, saying in part: "In the first place there has been a tremendous development in the pulp and paper industry in the last 25 years. In the early stage of development not sufficient attention was paid to technique and development of processes. But now, for a number of years, the companies have made efforts to attract to the industry more technical knowledge. Naturally it is also desirable that they be men who have a fair vision, the ability to handle men and to get along with people. As the industry has grown to huge proportions it has become more stabilized and the attention of executives has been directed in great degree towards perfection of processes and development of new processes.

"Such matters as forestry and conservation have been greatly developed and in all the various ramifications of the industry there is a call for young men who are willing to enter it as a profession. I mean a profession in the same sense it is understood by those who enter mining. Technical training is essential, but naturally the progress of those who come into the industry depends to a considerable extent upon other essential qualifications; tolerance, broad-mindedness and vision.

As a proof of the statement that the industry offers a future to young Canadians I might point out that 20 years ago the pulp and paper companies in this country were manned almost entirely by non-Canadians. To-day they are managed and operated largely by Canadians. Not only that but Canadians trained in our own industry have found many opportunities in other countries."

Honor Departing Mill Manager

Leaving behind a host of friends which he made during his stay in Fort William, and carrying with him the best wishes of all who knew him, E. M. Paukert, manager of the Fort William plant of the Abitibi Power & Paper Company, who recently was transferred to the Iroquois Falls plant as manager, left last week for the east. At a banquet in the Royal Edward Hotel many executives and others connected with Abitibi united to do honor to the departing manager in an evening of song and good fellowship during which Mr. Paukert was presented with a gold watch by the staff.

Provincial Mills Mark Record

Celebrating a record considered unique in pulp and paper mills, 50 employees of Provincial Paper Limited, who have been with the company since the sulphite mill started operating on Feb. 12, 1918, had dinner at the Shuniah Club in Port Arthur. These employes represented one-third of the original payroll of the plant. Out of the 400 men now on the payroll, 150 have been with the company at least 15 years, it was announced. The sulphite mill was operated 96 per cent of the total number of hours possible for it to run on a six-day basis during the 20 years, believed also to be a unique record, officials of the company said. The paper mill was put into operation 15 years ago. John Hill, one of the watchmen, who has walked a total of about 50,000 miles—equivalent to twice around the world—in his daily rounds for 20 years, was feted at the gathering. A. G. Pounsford, manager of the plant, presided.

F. A. Morris on Newsprint Situation

Upon the invitation of the town council at Fort Frances, F. A. Morris, resident manager of the Minnesota & Ontario Paper Company, speaking before several delegations, dealt at length with the present situation of the paper mills in Fort Frances and International Falls. He reviewed, also, the situation in general of the newsprint situation in the Dominion.

Mr. Morris said that the local mill was operating at about fifty-two per cent capacity, which is in keeping with an agreement between the members of the Canadian Newsprint Association, the production schedules for which are stipulated by the governments of Ontario and Quebec. Since these schedules are set in Canada, they do not, of course, apply in the United States. For this reason some newsprint which might otherwise be made here, were it not for the present Government's plan, is made and produced in International Falls. It was pointed out, however, that while not as much benefit acrues to Fort Frances when it is made on the American side, as when it is made here, nevertheless some benefit accrues to Fort Frances.

It was explained that the Governments are attempting to hold down production to current demands for several reasons. The primary purpose is to spread among the various papermaking communities any unemployment that may accrue as a result of the sharp decline in demand for newsprint. Another reason is to prevent any mills, that may so desire, from building up a large inventory of manufactured stock, with the idea that they might later sell it when the demand arrives. The fear is that inventories, thus built up, may result in distress newsprint going on the market and undermining the present basic price—$50 per ton. It was pointed out that the situation in Fort Frances is entirely different from that of any other papermill in Ontario. What actually applies there, if the Government adheres to the present policy with regard to Fort Frances is that newsprint, which would otherwise be made in this mill must of necessity, because of the Government's rule, be made in International Falls with Canadian power.

Great Lakes Has New Officers

L. J. Heit, treasurer, has been appointed general

manager of the Great Lakes Paper Company, head office Fort William, Ont., and Charles England, assistant treasurer, has been appointed secretary-treasurer, replacing R. C. Meech, K. C., as secretary and L. J. Heit as treasurer. Mr. Meech is not a director of the company. F. K. Carlisle has been appointed assistant-treasurer and comptroller. John E. Gefaell, who was originally listed as vice-president in charge of sales, no longer has an office with the company. He remains in charge of sales, however, under the contract which was part of the agreement at the time of the company's reorganization in 1936. Other officers of the company are C. H. Carlisle, president; E. G. Lomg, K. C., vice-president; E. E. Thistle and W. J. Palmer, assistant secretaries.

Odorous Fumes from Sulphate Mills

Because of the increasing number of inquiries received relative to the possibility of malodorous fumes from sulphate mills becoming a nuisance or doing damage, the National Bureau of Standards has prepared Letter Circular 508 for use in answering such inquiries.

The present interest in the matter is prompted by the spread of the sulphate pulp industry in the Southern States as the process is peculiarly well adapted to the production of both unbleached pulp, the so-called "kraft" pulp used largely for wrapping papers, and bleached pulp, suitable for fine papers, from the Southern pine wood.

Large quantities of offensive gases consisting largely of sulphur compounds are evolved in both the pulping process and in the recovery of the chemicals. It is stated that no injurious effects of these substances on health are recorded, but that if even small quantities of them are permitted to escape into the atmosphere, the mill may become a nuisance in the community. By proper design of the pulp mill and skillful operation of it, however, the escape of the gases can be held to a satisfactory minimum, and an outline of means of doing this is included.

Copies of the letter circular can be obtained free of charge on application to the Bureau.

Michigan Superintendents to Meet

[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, Mich., March 7, 1938—The March meeting of the Michigan Division of the American Pulp and Paper Mill Superintendents Association will be held Thursday evening, March 17, at 7 P. M., at the Park American Hotel. The program, which will be in charge of Mr. Tigwell and Mr. Roberts, representatives of the Beloit Iron Works, will consist of three films, the first being a sound picture showing the Panama City development, the second and third, silents, showing the Beloit Horizontal Dual Press and a short top felt on a cylinder machine.

WORLD MAKES NEWS PRINT RECORD IN 1937

(Continued from page 13)

France also turned out a significantly larger amount of news print paper last year, the 424,000 tons produced being 28 percent more than the output in 1936 and twice the production in 1929. Except for the drop in 1936, each year during the past decade has seen more news print made in France.

Japan Makes Record

For the first time, Japan has passed the 400,000 ton mark in news print, the 413,000 tons reported in 1937 being 30,000 tons ahead of the 1936 production and still more ahead of preceding years.

The new high figure of 353,000 tons of news print made in Newfoundland in 1937 was evidence of the increasing efficiency of the two large mills in Great Britain's oldest colony.

Sweden and Norway each made slightly more news print last year than in any previous year. There was small change in news print output of the lesser producers.

While perhaps nearly 5 percent of last year's output of news print went into stock instead of consumption, and so will have a deterrent effect upon 1938 production, it will not be long before the world figure gets up to 9,000,000 tons if business conditions are favorable.

WORLD PRODUCTION OF NEWS PRINT PAPER 1928-1937

(Thousand Short Tons)

Country	1937	1936	1935	1934	1933	1932	1931	1930	1929	1928	10-Year Average	Country
Canada	3,645	3,190	2,753	2,599	2,017	1,914	2,221	2,504	2,729	2,381	2,595	Canada
Great Britain	1,033	1,004	970	940	830	790	719	608	637	646	818	Great Britain
United States	946	921	912	957	946	1,009	1,157	1,282	1,392	1,418	1,094	United States
Germany	521	525	464	446	412	450	540	590	623	600	517	Germany
Finland	459	402	329	316	285	254	241	223	217	214	294	Finland
France	424	331	358	353	335	275	243	240	210	136	291	France
Japan	413	384	368	344	304	272	258	285	286	267	318	Japan
Newfoundland	353	328	336	316	271	272	295	287	256	231	295	Newfoundland
Sweden	303	282	298	272	266	257	265	240	275	234	269	Sweden
Norway	212	200	182	155	167	200	104	202	189	198	181	Norway
Russia	192	217	193	190	135(?)	125(?)	100(?)	90(?)	48(?)	7(?)	130(?)	Russia
Netherlands	97	91	92	92	87	85	79	84	77	76	86	Netherlands
Italy	66	69	76	68	72	74	69	69	52	45	66	Italy
Austria	62	57	50	50	50	53	62	64	62	57	57	Austria
Belgium	57	53	48	51	39	40	44	50	57	50	49	Belgium
Czechoslovakia	54	46	41	37	38	40	42	44	47	45	43	Czechoslovakia
Switzerland	50	44	45	39	45(?)	45	49	47	48	40	45	Switzerland
Poland	44	32	34	32	23	23	27	27	23	20	29	Poland
Spain	18(?)	18(?)	42	42	65(?)	65	62	32	30	26	40	Spain
Latvia	8	7	6	5	5	5	3	4	4	3	5	Latvia
Estonia	7	7	4	6	6	6	17	29	27	20	13	Estonia
Hungary	4	—	—	—	—	—	—	—	—	—	—	Hungary
Chile	2	7	6	6	—	—	—	—	—	—	2	Chile
Bulgaria	1	—	—	—	—	—	—	—	—	—	—	Bulgaria
Mexico	—	—	20	20	16	13	15	14	19	17	13	Mexico
Denmark	—	—	1	6	7	9	10	10	11	16	7	Denmark
Total	8,971	8,215	7,628	7,342	6,421	6,276	6,622	7,025	7,319	6,747	7,257	

Plumstead Pulp Method Sustained By Court

United States Court of Customs and Patent Appeals Awards Priority of Invention to Joseph E. Plumstead For Method of Puffing Pulp — Paper and Cordage Assn. Meet—Waste Merchants Meet At Annual Banquet.

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., March 7, 1938—The United States Court of Customs and Patent Appeals handed down a decision on February 28th, affirming in all particulars the decisions of the Patent Office tribunals awarding priority of invention to Joseph E. Plumstead of the Jessup & Moore Paper Company,

The Plumstead patent and reissue application involved in this interference are the property of the Jessup & Moore Paper Company, while the application of Messrs. McCormick and Schwarts, who opposed Plumstead, is assigned to the Celastic Corporation.

Since the United States Court of Customs and Patent Appeals is a court of last resort in interference proceedings, the decision is a final one holding that the particular method of puffing pulp described and claimed in the Plumstead patent No. 1,830,131 was invented by Mr. Plumstead and not by Messrs. McCormick and Schwartz, and that accordingly this invention is the property of the Jessup & Moore Paper Company and not of the Celastic Corporation.

Guest Speaker at Paper and Cordage Luncheon

Philip Meredith Allen was guest speaker at the recent luncheon meeting of The Philadelphia Paper & Cordage Association, Inc., held in Adelphia Hotel. He spoke on "Foreign-Isms", and revealed a great many startling facts about the dissemination of propaganda in this country. Mr. Allen has been a student of subversive activities for many years and has a wealth of information on the subject to which all those in attendance listened with wrapt attention.

Former President E. K. Lay Honored

Newly-elected president, Joseph Miller of Garrett-Buchanon Company, paid tribute to immediate past president E. K. Lay stressing the high standards he had set for the Association, and on behalf of the members presented Mr. Lay with a handsome Gladstone traveling case in recognition of his untiring efforts on behalf of the Association.

Howarth's "Buyers' Guide" Distributed

The "Buyers' Guide", compiled by J. R. Howarth of J. R. Howarth Company, has been completed and was distributed to all the members present. Mr. Howarth spoke briefly of the enormous benefits accruing to the members who make a practice of using this Guide in the Buying and Selling work. The Guide consists of letterheads of all the members, on which are listed the products of services of the individual members. A total of over 10,000 items are listed, all of which can be supplied by some member of the Association. Much time and effort is represented in this Guide toward putting the idea into practical, tangible form. Said Mr. Howarth: "We want to impress upon our members the necessity for using the seal of the Association on their letterheads and including a message on these letterheads setting forth the products each has for sale. This Guide, in former years, has proven itself to be of incalculable value to members of this friendly and enterprising Association, which is accomplishing remarkable work in promoting good fellowship and mutual helpfulness among their members, and at the same time, improving business conditions."

President Miller appointed a "GOOD WILL COMMITTEE", the members of which are George K. Hooper, E. K. Lay, Harry S. Platt, John R. Howarth, E. L. Richards, and John S. Heverly. The duty of this Good Will Committee is to make every one who attends the Association's meetings feel welcome, and its object is three-fold—the welfare of the Association, the welfare of its members, and the welfare of the member's business.

E. L. Richards of Th Buffalo Envelope Company, announced that they will donate a silver cup to be used as a trophy during the summer golf tournaments; this cup to be presented to the player turning in the best "Low Net" score for the season. Mr. Richards, who is chairman of the Golf Committee, announced that the first tournament will be held at Pine Valley early in May.

Waste Merchants' Annual Banquet

Approximately three hundred dealers attended the thirty-third annual banquet of the Philadelphia Waste Merchants' Association at the Broadwood Hotel on Tuesday evening, March 1st. The entertainment provided was the most outstanding in the annals of the Association, and valuable and useful souvenirs were presented to all together with handsome door prizes. At its conclusion, opinion was overwhelming that rarely if ever before, this Association had gathered together such a distinguished number of outstanding personalities in the trade. Among those in attendance from out of town were E. J. Keller, Robert Blank, Ernest and Oskar Mayer, William Stick, all of New York; Haney Continental of Diamond Fibre Company, Bridgeport, and Harry Ponise of Johns-Manville Company, New Jersey.

Kyler Paul Heads District Council

[FROM OUR REGULAR CORRESPONDENT]

CARTHAGE, N. Y., March 7, 1938. — Kyler Paul has been elected president of the Northern New York District Council which is composed of locals affiliated with the International Brotherhood of Papermakers and the International Brotherhood of Pulp, Sulphite and Paper Mill Workers. Other officers elected at the meeting included Ernest Noakes, of Dexter, first vice president; Forest Carter, of Harrisville, second vice president; Donald Robinson, of Norfolk, third vice president; Wilfred Crossman, of Watertown, fourth vice president; John Hayes, of Deferiet, corresponding and recording secretary; Clarence Faults, of Watertown, financial secretary, and William Tyo, of Norfolk, treasurer.

Financial News of Pulp and Paper Industry

Frazer Companies Net Profit Equals 2.05 Per Share — Chas. W. Pratt Estate Appeals State Tax Order — Reorganization Plans of Stevens & Thompson Co. — Container Corp. Profits Rise — Other Financial News.

New York Stock Exchange

High, Low and Last for the Week Ending March 9, 1938

	High	Low	Last
A. P. W.	3	3	3
Armstrong Cork Co.	34⅝	32	32¾
Celotex Corp.	20½	20	20
Celotex Corp., pf.	60	60	60
Certain-Teed Products Corp.	7⅜	6⅞	7
Certain-Teed Products Corp., pf.	29⅛	27½	8
Champion Paper & Fibre Co.	28	27	28
Champion Paper & Fibre Co., pf.	106	105⅜	106
Congoleum-Nairn Co.	22⅞	21	21
Container Corp. of America	15	13⅝	14¾
Continental-Diamond Fibre Co.	7¾	7⅜	7⅜
Crown-Zellerbach Co.	10⅞	10	10¼
Crown-Zellerbach Co., pf.	69	69	69
Flintkote Co.	16¼	14¾	15⅞
Robert Gair	4	3¾	3¾
International Paper & Power	8⅜	7⅛	7½
International Paper & Power, pf.	33½	28⅜	30¾
Johns-Manville Corp.	78	71	74
Johns-Manville Corp., pf.	124½	124½	124½
Kimberly-Clark Corp.	22½	22	22
Masonite Corp.	35	33	33½
Mead Corp.	12⅛	11	11
Mead Corp., pf.	53	53	53
Paraffine Companies, Inc.	40½	38¾	38¾
Ruberoid Co.	19¾	17½	17½
Scott Paper Co.	39½	39	39
Sutherland Paper Co.	24	23	23
Union Bag & Paper Corp.	10½	9⅜	9⅞
United Paperboard Co.	4⅝	4½	4½
U. S. Gypsum Co.	68⅛	63⅝	65½

New York Curb Exchange

High, Low and Last for the Week Ending March 9, 1938

	High	Low	Last
Brown Co., pf.	26	25	25
Great Northern Paper	29½	28	28
St. Regis Paper Co.	3⅛	3	3
St. Regis Paper Co., pf.	60	59¾	59¾
Taggart Corp.	4¼	4⅛	4⅛

Fraser Companies Profits Up

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., March 7, 1938—Fraser Companies Limited, of Edmundston, N. B., reports consolidated net income for 1937 of $759,552, as compared with $94,974 reported for 1936 and a net loss of $84,288 reported for 1935. This net profit was equal to $2.05 per share on the 371,016 shares outstanding, against $0.27 on the 355,016 shares outstanding a year ago. Operating earnings at $3,051,796 compared with $2,100,920.

The balance sheet shows a substantial increase in net working capital, $3,010,593 comparing with $2,636,542 a year ago. Current assets are over $1,000,000 higher at $5,796,393 a year ago. Inventory stands at $4,294,827, against $2,923,619 a year ago.

President K. S. Maclachlan, in his report to shareholders, says: "The year's transactions resulted in a net improvement to current position amounting to $374,051 after applying $669,028 on improvements to plant and properties and reducing fixed liabilities by the sum of $1,092,298. The capital expenditures amounting to $669,028 included a number of items of the pulp and paper mills which have been urgently required to improve operations but which have been deferred until this time. The principal items were equipment for more economical storing and reclaiming of pulpwood at Edmundston and a multistage bleaching system for the Edmundston sulphite pulp mill.

"The Lumber Division operated at moderate capacity during the year. The Restigouche Pulp Mill and the Edmundston Board Mill operated at full capacity during the year. The Madawaska Paper Mills met an extremely active demand during the first ten months, but experienced a definite reduction in volume during the last two months. The volume of pulp and paper products sold during the year was the highest in the companies' history.

"Under the favorable business conditions which prevailed during 1937 a net profit was made in every operating division. This has been a source of great satisfaction to the operating, sales and administrative staffs and their continued efforts to meet the changed and more difficult situation now facing us are greatly appreciated."

Appeal From Tax Appraisal Order

[FROM OUR REGULAR CORRESPONDENT]

BOONVILLE, N. Y., March 7, 1938.—A notice of appeal from a state tax appraisal order in the estate of the late Charles W. Pratt, president of Moyer & Pratt Inc., was filed this week before Judge E. H. Ringrose. The appraisal showed a tax of $48,713.19 based on a net estate of $1,089,474, deductions of $357,027.19 having been allowed from the gross estate of $1,446,501. The appeal is taken by Walter Pratt, as executor, on the claim that the appraisal is in error on values of certain stocks held by the estate and appraised by the officials at $1,270,614 as the market value. In arriving at $977,259 for stock of the Gould Paper Company the appraiser valued the stock at $88.28 per share when it should have been $40.33, the appeal alleges. The total of $203,716 for stock of the Island Paper Company was likewise erroneous, it is alleged, because it was figured on the basis of $47.42 instead of $23.13 per share. The federal appraisal involved $142,998 and the appeal charged that error was made in computing the value of stock holdings and assessing the valuations higher than the actual market value, also that examining agents included as assets 2,900 shares of the capital stock of Moyer & Pratt Inc., which had been transferred to the decedent's two sons a few years before his death in 1934.

Want Stevens & Thompson Plan Postponed

[FROM OUR REGULAR CORRESPONDENT]

GREENWICH, N. Y., March 7, 1938. — Approval of plans for a reorganization to care for an increasing volume of business of the Stevens & Thompson Paper Company were postponed during the week because of objections from counsel for bondholders. Protest followed announcement by counsel for petitioners that the firm had no unsecured creditors,

having used approximately $90,000 funds on hand in December to meet all outstanding obligations. The firm, which operates mills here, North Hoosick and Walloomsac, asks in its petition for the approval of the issuance of approximately $250,000 in certificates of indebtedness for carrying on the business. In the original petition presented several weeks ago this amount was set at $100,000 but immediate need for materials and repairs to mill property and equipment necessitated the increased total. These certificates would be granted prior obligation to all secured and unsecured creditors of the company, according to the petitioner's request. Counsel for bondholders objected to these arrangements and asked a postponeponement of the matter after learning how the $90,000 funds available in December had been used. Current assets of the concern are in excess of the liabilities, it was declared. Interest payment on bonds has not been defaulted although the $50,000 annual sinking fund requirements are in default about three years. Because of this condition the petition asks a postponement for the payment of the 1942 bond issue of $495,000.

Container Corp. Earnings Rise

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., March 7, 1938. — The Container Corporation of America this week issued an earnings statement showing the setting up of a new record in this company's earnings. The big board concern statement showed net profit of $1,784,104 for 1937, equal to $2.28 a share on 781,253 capital shares, marking a new high in this company's earnings. In 1936, net profit was $1,286,942, or $1.97 a share on 653,540 shares. Current assets amounted to $5,926,886 at the close of the year, including $3,143,416 inventories, $1,650,344 cash and $1,122,218, receivables. The company closed the year with earned surplus of $1,940,990 as compared to $1,017,762 in 1936.

Restigouche Company Earnings Rise

An increase of over 40% in operating earnings is reported by Restigouche Company, Limited, for 1937. Capacity operations were experienced during the year and prices for rayon sulphite pulp were moderately higher.

Operating earnings of $924,336 compared with $650,498 in 1936. The balance of net earnings before taxes was $232,764 against $43,239 in the previous year. Provision of $37,000 for income taxes, up from $7,800 for 1936, left net income of $195,764 in comparison with $35,439 for 1936. This net income was applicable to the capital stock, all of which is owned by Fraser Companies.

New Power Plant on Wisconsin River

[FROM OUR REGULAR CORRESPONDENT]

TOMAHAWK, Wis., March 7, 1938. — The Wisconsin Public Service Corporation prepared last week to begin construction of a $1,500,000 power project at Grandfather Falls on the Wisconsin River. C. R. Meyer and Sons Company, Oshkosh, Wis., has a crew of men erecting camp buildings, felling trees, and preparing for the construction work. A new dam and hydro-electric plant will be built to take care of additional power demands in the upper Wisconsin locality.

American Writing Reports $81,905.76 Loss

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, March 7, 1938—The American Writing Paper Corporation (present company began business April 1, 1937) reports for nine months in 1937 a net loss of $81,905.76 which includes interest of $14,417.82. In the interest charges are payments to the Federal Reserve Bank on 5 per cent secured notes.

Included in operating losses are "extraordinary charges" of $24,813.90 and adjustment on inventory of stock and raw materials amounting to $35,943.42.

In the statement of the corporation, signed by Thomas H. Blodgett, chairman of the board, and Leon M. Yeorg, president, the stockholders are advised of the following figures: "After all expenses but before interest, the loss for the last three months ending December 31, was $81,597. After providing for interest on the current Federal Reserve Bank loan aggregating $3780.82, the net loss for the three months was $85,377.82. The results for the last quarter include extraordinary charges of $5766.67 and net year-end inventory adjustments of $27,943.42, a total of $33,710.09.

"Volume of activity in our mills was on a profitable basis during the first half of 1937. Subnormal volume of business of the last two quarters and continuance of increased cost of labor and raw materials unaccompanied by corresponding increases in sales prices, were responsible for the losses during that period.

"Evidence is available that economies and efficiencies effected during the year just closed, at the rate of $250,000 per annum, have been offset for the reasons above given. Thus with a return to normal volume, and restoration of the proper margin between costs and selling prices, improved results should obtain.

"At the inception of business in April 1, 1937, the sum of $500,000 was borrowed from the Federal Reserve bank of Boston. This has been reduced at the date of this report to $125,000."

Current assets on Dec. 31 were $2,260,215, including $516,358 in cash, and current liabilities, $280,379, excluding the $250,000 bank loan.

Nashua Gummed Paper Report $384.469

The Nashua Gummed and Coated Paper Company of Nashua, N. H., reports $384,469 as the consolidated net profit for 1937 after preferred dividends and provisions for taxes, including excess profit taxes and undistributed profit taxes. This means $8.35 a share on the 46,058 shares of outstanding common stock. The consolidated net for 1936 was $328,643, equivalent to $8.31 a share on a smaller number of shares outstanding.

The report shows current assets of $2,646,484 against current liabilities of $376,889, at the close of 1937. Cash alone amounted to $814,000. There were no bank loans outstanding at the close of either 1936 or 1937.

D. L. Pickering to Manage Fairfield Co.

BALTIMORE, Ohio, March 7, 1938. — Dan L. Pickering has assumed the general managership of the Fairfield Paper Company, following the resignation of M. R. Hatch. Mr. Pickering has been associated with the Fairfield Paper Company for the past twenty-three years making many friends in the industry who will undoubtedly be pleased to learn of his promotion.

Pacific TAPPI Meets at Camas

The Pacific Section of the Technical Association of the Pulp and Paper Industry helds its fourth dinner meeting of the season at Camas, Wash., on February 8, 1938. The dinner was served in the Camas school cafeteria and was attended by 125 men, the largest number to attend any dinner meeting during the current season.

N. W. Coster, vice chairman of the section, presided at the meeting in the absence of George H. McGregor who was in the East. Local arrangements for the dinner were in the hands of W. R. Barber, Technical Director of the Camas Mill of the Crown Zellerbach Corporation, but as Mr. Barber was sent East some time before the meeting, the plans were carried out by his secretary, Mrs Leona Van Arnam, assisted by Robert Mispley of Mr. Barber's staff.

The first part of the program consisted of the presentation of a motion picture showing the plant and operations of the American Potash and Chemical Company at Trona, Calif. This picture was presented by Frederic M. Pape, the Seattle representative of the Wilson and Geo. Meyer and Company. It consisted of three reels, the first of which was in Kodachrome and showed the scenery along the road from Los Angeles to Trona, which is situated inland in desert country on the shore of the famous Searles Lake. It is from this lake that this company obtains the brine from which its various products are made. The other two reels showed the large modern plant, its equipment, and the housing and recrea tional facilities provided for the men employees. The various steps in the refining of such products as soda ash, borax, and salt cake were illustrated.

A. R. Heron, assistant to the operating committee of the Crown Zellerbach Corporation, was scheduled as the principal speaker of the meeting on the subject of "Labor Problems." A few hours before the meeting, word was received that the train bringing Mr. Heron up from California was delayed by snow slides, and he would be unable to attend the meeting. Roderic Olzendam, of the Weyerhaeuser Timber Company was appealed to on his arrival to attend the meeting and kindly consented to give an impromptu talk on what he preferred to describe as "Human Engineering." With but a few minutes to prepare, Mr. Olzendam presented a talk which was an inspiration to all present, and showed the sound reasoning and logical thinking which is possible in guiding human relations in industry.

Those in Attendance

Those who attended the meeting are as follows: C. E. Ackley, Hawley Pulp & Paper Company, Oregon City; Floyd Aslin, Crown Willamette Paper Co., Division, Crown Zellerbach Corporation, Camas; Niles M. Anderson, St Regis Kraft Company, Tacoma; John Ashby, Westminster Paper Company, New Westminster, B. C.; G. S. Brazeau, Pulp Division, Weyerhaeuser Timber Company, Everett; E. B. Beidleman, Crown Willamette Paper Company, Division Crown Zellerbach Corporation, Camas; Chas. H. Belvin, Chromium Corporation of America, Portland; Robert A. Bremner, Electric Steel Foundry Company, Portland; J E. Brokaw, Crown Zellerbach Corporation, San Francisco; Ella F. Brokaw, San Francisco; J. E. Brown, *Pacific Pulp & Paper Industry*, Portland; R. S. Carey, National Aniline and Chemical Company, Portland; A. C. Catto and G. W. Charters, Crown Willamette Paper Company, Division Crown Zellerbach Corporation, Camas; W. W Clarke, Longview Fibre Company, Longview; Elton B. Clarke, Monarch Forge and Machine Works, Portland; George H. Clark, Air Reduction Sales Company, Portland; Mrs. George H. Clark, Portland; E. W. G. Cooper, Crown Willamette Paper Co., Division Crown Zellerbach Corporation, Camas; N. W Coster, Soundview Pulp Company, Everett; J. V. B. Cox, Hercules Powder Company, Portland; J. LeRoy Crane, Crown Zellerbach Corporation, San Francisco; Roscoe Deublentz, Crown Willamette Paper Company, Division Crown Zellerbach Corporation, Camas; R. E. Drane, St. Helens Pulp and Paper Company, St. Helens.

Alec Duncan, Hercules Powder Company, Portland; C. W. Duncan, Crown Zellerbach Corporation, San Francisco; H. T. Emsley, Tennessee Eastman Company, Kingsport, Tennessee; Carl Fahlstrom, Longview Fibre Company, Longview; Lyle G. Fear, Westinghouse Electric and Manufacturing Company, Portland; Francis W. Flynn, Crown-Willamette Paper Company, Division Crowsn Zellerbach Corporation, Camas; Dr. Leo Friedman, Oregon State College, Corvallis; Harry Fromong, Hawley Pulp and Paper Company, Oregan City; Robert J. Fuller and V. C. Gault, Crown-Willamette Paper Co., Division Crown Zellerbach Corporation, Camas; H. Gevers, Longview Fibre Company, Longview; William R. Gibson, Northwest Filter Company, Seattle; Harry W. Glenn and W. G. Goodwin, Crown Willamette Paper Company, Division Crown Zellerbach Corporation, Camas; T. H. Grant, Columbia River Paper Mills, Vancouver, Wash.; Reginald B. Haight, Crown Willamette Paper Co., Division Crown Zellerbach Corporation, Camas; John E. Hassler, Coast Manufacturing and Sales Company, Portland; J. E. Hanny, Crown Willamette Paper Company, Division Crown Zellerbach Corporation, Camas; H. F. Hoehne, Longview Fibre Company, Longview; George W. Houk, Hooker Electrochemical Company, Tacoma; W. F. Hynes, General Electric Company, Portland; A. M. Isaacs, Crown Zellerbach Corporation, Portland; W. C. Jacoby, Crown Willamette Paper Company; Division Crown Zellerbach Corporation, Camas; Clarence Johnson, Oregon State College, Corvallis; L. T. Johnson, Hawley Pulp & Paper Co., Oregon City; G. M. Julien and Herman Junge, Crown Willamette Paper Company, Division Crown Zellerbach Corporation, Camas; William M. Kahn, Oregon State College, Corvallis; W. A. Kaye, Crown Willamette Paper Company, Division Crown Zellerbach Corporation, Camas; Norman Kelly, Pulp Division, Weyerhaeuser Timber Company, Longview; B. L. Kerns, Westinghouse

Electric and Manufacturing Company, Seattle; E. E. Kertz, John W. Bolton & Sons Company, Portland; C. M. Koplins, E. C. Lathrop, Clyde E. Laver, J. G. Long, and L. D McGlothlin, Crown Willamette Paper Company, Division Crown Zellerbach Corporation, Camas; C. J. McAllister, Coast Manufacturing and Sales Company, Portland; H. C. Macauley, Longview Fibre Company, Longview; R. V. Maier, General Electric Company, Portland; C. O. Malnberg, Hercules Powder Company, Portland; M. L. Mammen, Crown Zellerbach Corporation, Portland; Wm. C. Marshall, Heller & Merz Corporation, Portland; Robert W. Martig, Control Equipment Company, Portland; A. M. Mears, Pacific Coast Supply Company, Portland; J. J. Melody, Crown Willamette Paper Company, Division Crown Zellerbach Corporation, Camas; Ned Menzies, W. S. Tyler Company, Seattle; H Norman Miller, Westinghouse Electric and Manufacturing Company, Portland.

R. L. Miller and R. G. Mispley, Crown Willamette Paper Company, Division Crown Zellerbach Corporation, Camas; C. W. Morden, Morden Machines, Portland; R. E. Moisant and A. G. Natwick, Crown Willamette Paper Company, Division Crown Zellerbach Corporation, Camas; K. R. Newman, Oregon State College, Corvallis; Fred Nicholson, Stetson-Ross Machine Company, Seattle; S. Norman, General Iron & Steel Works, Portland; M. Norwood, Columbia River Paper Mills, Vancouver, Wash.; E. H. Nunn, Western Waxed Paper Company, Camas; H. D. Olds and F. A. Olmsted, Crown Willamette Paper Company, Division Crown Zellerbach Corporation, Camas; Roderic Olzendam, Weyerhaeuser Timber Company, Tacoma; C. J. Page, Longview, Fibre Company, Longview; Frederic M. Pape, Wilson & Geo. Meyer & Co., Seattle; Earl Paul, Crown Zellerbach Corporation, Portland; Thomas Parks, Columbia River Paper Mills, Vancouver, Wash.; R. T. Petrie, Bagley & Sewall Company, Portland; William Pittam, Oregon State College, Corvallis; H. A. Rehnberg, Northwest Filter Company, Seattle; W. D. Rigg, Longview Fibre Company, Longview; H. H. Richmond, Electric Steel Foundry Company, Portland; Cass B. Roberts, H. K. Roberts and J. F. Robertson, Crown Willamette Paper Co., Division Crown Zellerbach Corp., Camas; M. V. Roley, Longview Fibre Company, Longview; Harlan Scott, *Pacific Pulp and Paper Industry*, Seattle; D. L. Shirley, Link-Belt Company, Portland; Fred R. Sievers, Crown Willamette Paper Company, Division Crown Zellerbach Corporation, Camas; R. W. Simeral, Fir-Tex Insulating Board Company, St. Helens; Larry Smith, *Pacific Pulp and Paper Industry*, Seattle; C. F. Stevey, Crown Willamette Paper Company, Division Crown Zellerbach Corporation, Camas; Franz Sturm, Oregon Pulp and Paper Company, Salem; Philip Such and F. F. Sullivan, Crown Willamette Paper Co., Division Crown Zellerbach Corp., Camas; E. G. Swigert, Electric Steel Foundry Company, Portland; Paul J. Thiess, Longview Fibre Company, Longview; E. H. Tidland, Pacific Coast Supply Co., Portland; Vernon L. Tipka, Portland; Cecil L. Triplett, Hawley Pulp and Paper Company, Oregon City; R. M. True, General Dyestuff Corporation, Portland; Mrs. W. J. Van Arnam, Crown Willamette Paper Co., Division Crown Zellerbach Corporation, Camas; L. H. Wear, Taylor Instrument Company, Portland; Fred J. Weleber, Hawley Pulp and Paper Company, Oregon City; R. S. Wertheimer, Longview Fibre Company, Longview; E. D. Webberley, Crown Willamette Paper Company, Division Crown Zellerbach Corporation, Camas; Boyd K. Wickwire, Longview Fibre Company, Longview; B. Weidenbaum, Crown Willamette Paper Company, Division Crown Zellerbach Corporation, Camas; J. A. Wilcox, Longview Fibre Company, Longview; J. M. Wilcox, St. Regis Kraft Company, Tacoma; J. B. Wilt, Spaulding Pulp and Paper Company, Newberg.

Savannah Laboratory Reorganizes

On February 28, 1938 the Pulp and Paper Laboratory of the Industrial Committee of Savannah, Inc. became the "Herty Foundation Laboratory" under an act of the recent session of the Georgia legislature. The Laboratory in the past has been supported financially chiefly by the Chemical Foundation, Inc. of New York City and by contributions by the Georgia Legislature and the Industrial Committee of Savannah.

At the close of last year it became known that the major part of the funds supporting the Laboratory would not be available in the future. With this situation foreshadowing the possible closing of the Laboratory an emergency fund was raised by equipment manufacturers under the leadship of C. Stewart Lee of the Pusey & Jones Corporation of Wilmington, Del., sufficient to continue its operation until ways and means could be provided for its permanent financing.

Following this action the Georgia Legislature made an appropriation of $20,000 at its special session in addition to the $10,000 appropriated at the last regular session. These funds, together with the continued contribution by the Industrial Committee of Savannah, insure the financing of the Laboratory for 1938.

For the future, the Georgia Legislature created by special act the Herty Foundation, authorized to take over the equipment and operation of the Laboratory and to receive contributions from other states and sub-divisions thereof, individuals and corporations. The board of trustees of the Foundation is as follows: Jas. Fowler, Seperton, chairman; G. M. Bazemore, Waycross, vice chairman; Elliott W. Reed, Savannah, secretary-treasurer; Dr. Chas. H. Herty, Savannah, executive director; Harley Langdale, Valdosta; G. E. Maddox, Rome.

The past policies and purpose of the Laboratory will be continued, viz. through systematic research to determine with the use of standard papermill equipment and chemicals what modification are necessary for the use of the fast-growing woods of the Southern States, for woodpulp and products manufactured therefrom. As has been customary from its origin, the information developed in the Laboratory will be available to all. It is the purpose of the Laboratory to cooperate with all agencies engaged in this field of work.

Through such studies it is believed that capital will be led to develop mills which will contribute to the welfare of the people of the South and the economic independence of the nation.

West Virginia Bonds Listed

West Virginia Pulp and Paper Company first mortgage 4½ per cent bonds due in 1952 have been admitted to the New York Stock Exchange list.

Obituary

Arthur B. Daniels

Arthur B. Daniels, manufacturer and civic leader of Adams, died March 5, of a heart ailment at Plunkett Memorial Hospital, Adams, Mass. Mr. Daniels was president of the L. L. Brown Paper Company, with which he had been associated for sixty years. He was 77 years old.

A native of Ashfield, Mass., son of Mr. and Mrs. Amos D. Daniels, he moved to Adams when he was

ARTHUR B. DANIELS

17 and started work for the company of which he was elected treasurer and general manager in 1892 and of which he had been president since 1919.

Mr. Daniels had served as president of the Writing Paper Manufacturers Association in 1915 and as president of the American Paper and Pulp Association in 1916-1917. He was an incorporator and had served as vice president and treasurer of the Knickerbocker Portland Cement Company.

At his death he was a director of American Paper Exports, Inc., of New York, Columbia National Life Insurance Company of Boston, Berkshire Life Insurance Company, American Investment Securities Company of Boston, and was vice president of the Home Market Club of Boston. He was president of Greylock National Bank of Adams and a trustee of Plunkett Memorial Hospital. For nineteen years he was a member of the Greylock Reservation Commission.

He was also a member of the New York Athletic Club, Republican Club of New York City, National Association of Manufacturers, National Industrial Conference Board and Associated Industries of Massachusetts. Mr. Daniels had been a Mason for fifty years.

Survivors are his widow, Mrs. Ida Millard Daniels; two sons, Rupert B. and A. Millard Daniels, and one daughter, Mrs. Theodore R. Plunkett, wife of State Senator Plunkett, all of Adams; a brother, William L. Daniels of North Adams, and a sister, Mrs. Anna L. Porter of Ashfield.

Thomas C. Morris

Thomas Cliffton Morris, 71, retired paper merchant, died February 24 in Mt. Carmel Hospital, Columbus, Ohio, of complications following an operation five weeks ago.

Mr. Morris had been associated with the Central Ohio Paper Company, Columbus, Ohio, for 40 years prior to his retirement in 1934. He was a member of the First Congregational Church and the Columbus Country Club.

Surviving are his wife, a daughter, a sister, two brothers and a brother-in-law, Orlando A. Miller, chairman and treasurer of the Central Ohio Paper Company.

Henry G. Mooney

Henry G. Mooney, 78, founder of H. G. Mooney Company, Newark, N. J., wholesale paper dealers, died February 28 at his home in Westfield, N. J. Mr. Mooney, who retired in 1936, began his business career with Matthias Plum, paper dealer of Newark; in 1880. In 1918 he organized the H. G. Mooney Company.

Mr. Mooney was a member of the Presbyterian Church for more than half a century. He served on the Town Council and was a charter member of the Westfield Building and Loan Association, of which he was a director for 35 years. He was also associated with the Newark Athletic Club, the Newark Kiwanis Club, West Fields Chapter S.A.R., Shackamaxon Country Club and Westfield Chapter of the Old Guard.

Surviving are a daughter, two sisters and a grandson.

Harold C. Upham

Harold C. Upham, 56, for 36 years associated with Hollingsworth & Whitney Company, Boston, as salesman, died March 3 at his home at Wellesley Hills, Mass., after a long illness.

Mr. Upham was widely known in the New England territory which he covered in his work as salesman. He possessed a genial, kindly personality, which drew everybody to him. He was a member of the Boston Paper Trade Association.

A widow, Mrs. Mary Upham; a daughter, Miss Molly Upham, and a sister, Mrs. Harry Peabody, all of Wellesley Hills, are living.

The funeral services were held at Mt. Auburn Chapel, Cambridge, Mass., March 5.

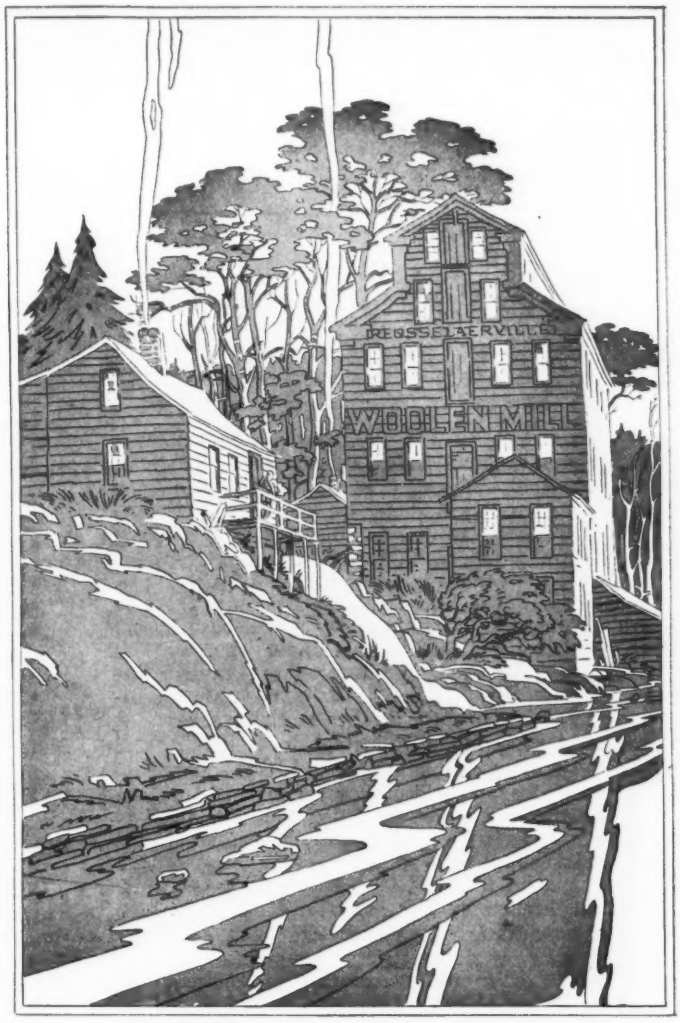
N. E. Paper Merchants to Meet March 29

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., March 7, 1938.—The next meeting of the New England Paper Merchants Association is to be held Tuesday evening, March 29, at a place yet to be determined.

The next meeting of the Cost Finding Group is to be held March 11 at the Boston Chamber of Commerce.

IT STARTED BY A WATERFALL

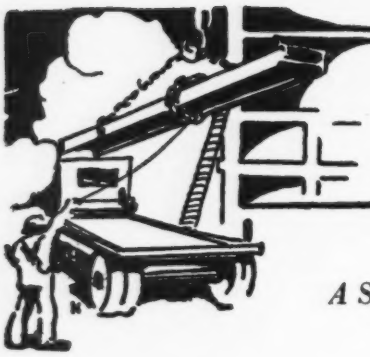


Shortly after the Civil War the development of the process of making paper from wood pulp lent a great impetus to the American paper industry. Up to that time, practically all papermakers' felts were imported from England. In 1870 a young man in Rensselaerville, New York, decided that America should be able to manufacture its own felts. In a little woolen mill that had already been in operation for 100 years, situated by a waterfall in that little country town, Francis Conkling Huyck first experimented with making papermakers' felts and founded the company that now bears his name. The American paper industry, then in its infancy, has made remarkable progress since those early days and today is recognized as the leader throughout the world. The best indication of how F. C. Huyck & Sons have kept pace with the progress of this industry is the fact that in America more Kenwood felts are used than any other make . . . that in all parts of the world Kenwood felts are used extensively, even in England.

KENWOOD WOOL PRODUCTS

KENWOOD FELTS

F. C. Huyck & Sons · Albany, N. Y.



CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Financing and Operation of Pulp and Paper Mills

General Construction News

Jackson, Miss.—The Jackson Paper Company, 120 South Gallatan street, general paper products, has asked bids on general erection contract for new one and two-story building, to be used for storage and distributing, as well as office service, providing large increase in present facilities. It will cost close to $40,000, including equipment. N. W. Overstreet and A. H. Town, Standard Life Building, Jackson, are architects. Building contract will be awarded at early date and work placed under way.

Chicago, Ill.—The United States Blue Print Paper Company, 201 South Wabash avenue, manufacturer of blue print and other special paper stocks, has leased space in the Occidental Building, 322 West Washington street, totaling about 12,000 square feet of floor space, and will occupy for expansion. Present quarters at first noted location will be retained as heretofore, as well as premises now used at 228 North LaSalle street.

Green Bay, Wis.—The Northern Paper Mills, Inc., manufacturer of tissue and other paper stocks, is making awards for primary equipment to be installed in new steam-electric power plant at mill, recently referred to in these columns, to replace power service for the plant previously secured through hydroelectric generating stations at White Rapids and Chalk Hills, on the Menominee River, near Amberg, Wis., lately sold to the Wisconsin-Michigan Power Company, Appleton, Wis. An award for turbine units and accessories has been made to the General Electric Company, Schenectady, N. Y., while contract for high-pressure boilers has been let to the Riley Stoker Corporation, Worcester, Mass. Awards for miscellaneous equipment will be placed at early date, as well as general contract for building superstructure. New plant is estimated to cost about $750,000, including equipment. Sargent & Lundy, Inc., 104 South Dearborn street, Chicago, Ill., is consulting engineer.

Lynchburg, Va.—John H. Heald Division of Mead Corporation, manufacturer of paper board and allied board products, plans rebuilding of storage buildings at local plant, recently destroyed by fire with loss reported at close to $30,000, including raw materials.

Chicago, Ill.—The Servicised Products Corporation, 6051 West 65th street, manufacturer of asphalt sheet products for building service, etc., has asked bids on general erection contract for a new two-story addition, 75 x 200 feet, to be equipped for main manufacturing unit, replacing a one-story structure destroyed by fire several months ago. A one-story adjoining building, 21 x 100 feet, will also be constructed. Entire project is estimated to cost close to $100,000, including equipment. R. E. Major & Co., 7619 Bennett avenue, Chicago, are architects.

Enka, N. C.—The American Enka Corporation, Enka, near Asheville, N. C., manufacturer of viscose rayon products, has begun erection of a new one-story addition for expansion in chemical department, for which general contract recently was let to Potter & Shackleford, Inc., Greenville, S. C. as previously reported in these columns. W. H. Arthur Company, 225 Patton avenue, Asheville, has been awarded contract for roofing and sheet metal work, while the H. W. Kindler Company, 8 Magnolia avenue, Asheville, has contract for plumbing installation. New unit will cost about $60,000, including equipment. Work also is under way on new one-story buildings at mill for general storage and distributing service. Company headquarters are at 271 Church street, New York, N. Y. A. J. L. Moritz is technical manager and vice-president in charge of production.

Cleveland, Ohio—The Acme Paper Stock Company, 6204 Central avenue, S. E., general paper goods, is said to have plans under way for rebuilding of plant recently damaged by fire, with loss estimated close to $25,000, including equipment.

Osaka, Japan—A National Policy Corporation, recently organized under the direction of the Government of Japan, with capital of 100,000,000 yen (about $29,000,000) is arranging plans for early construction of a new mill for the production of paper and rayon pulp, initial plant to have a capacity of about 160,000 metric tons per annum. Site for new mill will be selected at early date. It will comprise several large one and multi-story units, with power plant, pumping station and other mechanical departments, reported to cost in excess of $5,000,000, with machinery. Of the total output noted, about 60,000 metric tons will be paper pulp, and the remainder, rayon and staple fiber pulp products. It is proposed to have the new plant ready for service in 1939.

Workington, England—Plans are under way by a Continental company, name temporarily withheld, for the construction of a large pulp and paper mill on site along the River Derwent, Workington, Cumberland, England, to be given over to the production of fine papers, including transparent stocks. New mill will consist of several large operating units and is estimated to cost over $2,500,000, with equipment. It will include a power house, pumping station, machine shop and other mechanical structures. Plant is scheduled to be ready for production in 1939.

Uleaborg, Finland—Oulu O.Y., manufacturer of sulphate cellulose produets, has plans under way

for expansion in local mill, with construction of new buildings and installation of equipment to develop an output of 100,000 tons of finished material per annum. Work is scheduled to begin at early date.

New Companies

Boston, Mass.—The Friedland Paper Company, 120 Bolyston street, has filed notice of company organization to deal in paper products of various kinds. Company is headed by Henry Friedland, 172 Seaver street, Boston; and Hyman P. King, 197 Rawson road, Brookline, Mass.

New York, N. Y.—The Unit Ruling and Folding Corporation has been chartered with capital of $20,000, to deal in paper products of various kinds. New company is represented by Joseph S. Birenbach, 44 Court street, Brooklyn, N. Y., attorney.

Columbus, Ohio—The Atlas Blue Print and Supply Company has been organized with capital of $10,000, to deal in blue print papers and other paper stocks. The incorporators are Myron L. Harrison and Robert W. Harrison. New company is represented by Sherman B. Randall, 33 North High street, Columbus, attorney.

U. S. Trade With Canada

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 9, 1938—In view of the forthcoming reopening of the Canadian trade agreement with the United States, a pamphlet just issued by the Department of Commerce is of particular interest. Among other things the Department shows that a large part of our imports for consumption from Canada consist of semi-finished and finished manufactured products, mainly wood pulp and paper. In 1937 almost 36 per cent, by value, of our total imports from Canada were finished manufactures.

Imports of newsprint accounted for more than one-fourth the entire value of imports from Canada in 1937. The value 109.5 million dollars was considerably higher than the figure for 1936—86.5 million dollars. Imports of wood pulp, which ranks second in value among our imports from Canada, were valued at 32.4 million dollars in 1937 compared with 27.2 million dollars in the previous year. Gains in the value of imports of a number of other wood and paper products raised the total for the wood and paper group from 148.5 million dollars in 1936 to 185.0 million dollars in 1937.

To Construct Storage Reservoir

[FROM OUR REGULAR CORRESPONDENT]

WAUSAU, Wis., March 7, 1938. — Preliminary steps are being taken by the Wisconsin Valley improvement Company of Wausau, and the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., to construct a storage reservoir on the Little Eau Pleine River, in Marathon County, Wis. The project will include a tunnel and channel leading from the Wisconsin River to the Big and Little Eau Pleine reservoirs. This is the second step in the $15,000,000 project to provide a uniform water supply the year around for paper mills using water power along the Wisconsin River. The Marathon County Board has petitioned the Wisconsin Public Service Commission to approve the project, and urges land owners to cooperate in its sanction, because of the general improvement of that area and the elimination of fire hazards.

Paper Men To Protest Trade Agreement

[FROM OUR REGULAR CORRESPONDENT]

WASHLNGTON, D. C., March 9, 1938—The paper industry of the country seems to be more interested in the United Kingdom's trade agreement hearings which will begin March 14 than at any Washington hearings since the NRA days, if the number of appearances means anything. More than 400 persons and organizations have notified the government that they will be represented at these hearings which will last some ten days with the paper industry being led by the American Paper and Pulp Association.

In an announcement made last week, Henry F. Grady, chairman of the Committee for Reciprocity Information who will conduct the hearings, stated that because of the large number of witnesses who desire to be heard over that of any previous hearings the sessions have been extended beyond the customary period for such proceedings.

On March 14 and 15 members of congress and municipalities will be given an opportunity to appear at a general session. Beginning on March 16 the hearings will be divided up into groups in order that they may be expedited.

In connection with the paper industry the following appearances have been filed up to the present time: American Paper and Pulp Association, New York City; D. C. Everest, Marathon Paper Mills Company, Rothschild, Wis.; E. W. Kiefer, Port Huron Sulphite and Paper Company, Port Huron, Mich.; W. J. Schweitzer, P. J. Schweitzer Company, Elizabeth, N. J.; George Olmsted, Jr., S. D. Warren Company, Boston, Mass.; John MacLaurin, MacLaurin-Jones Company, Brookfield, Mass.; Wm. Blackford, Strathmore Paper Company, West Springfield, Mass.; Edward A. Sitzer, Hurlbut Paper Company, South Lee, Mass.; A. L. Newton, Easton-Dikeman Company, Mt. Holly Springs, Pa.; W. L. Carver, Wall Paper Institute New York, N. Y.; G. F. Mellen, the Imperial Paper and Color Corporation, and G. Fred Beaudry, the Beaudry Wall Paper Corporation; United Wall Paper Craftsmen and Workers Chicago and other cities (Wm. Collins, Samuel Gillespie and Rudolph Heinl).

A. B. Colby With Small Business Men

Albert B. Colby, formerly vice president of George B. Hurd, Inc., manufacturers of fine social stationery is affiliated now with the National Small Business Men's Association in their New York offices at 41 East 42nd street. Mr. Colby is in charge of the national membership campaign. The association was founded last year by DeWitt M. Emery, president of the Monroe Letterhead Corporation of Akron, Ohio. The organization has spread rapidly over more than half the States of the Union. It will hold its National Convention in a mid-continent city as yet to be designated from June 7 to 11 inclusive this year.

To Operate Plant in Bridgeport

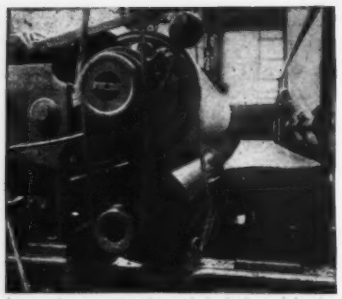
[FROM OUR REGULAR CORRESPONDENT]

WATERBURY, Conn., March 7, 1938.—The plant of the White & Wells Company here is to be torn down and the concern is to operate as the Bridgeport Paper Box Company in Bridgeport, Conn., manufacturing setup and folding paper boxes.

William E. Treat, secretary-treasurer of the White & Wells Company, has returned from a visit to Florida to his home in Cheshire, Conn.

WHEN IT COMES TO PRESS ROLLS,

2 PRESSES OUT MORE



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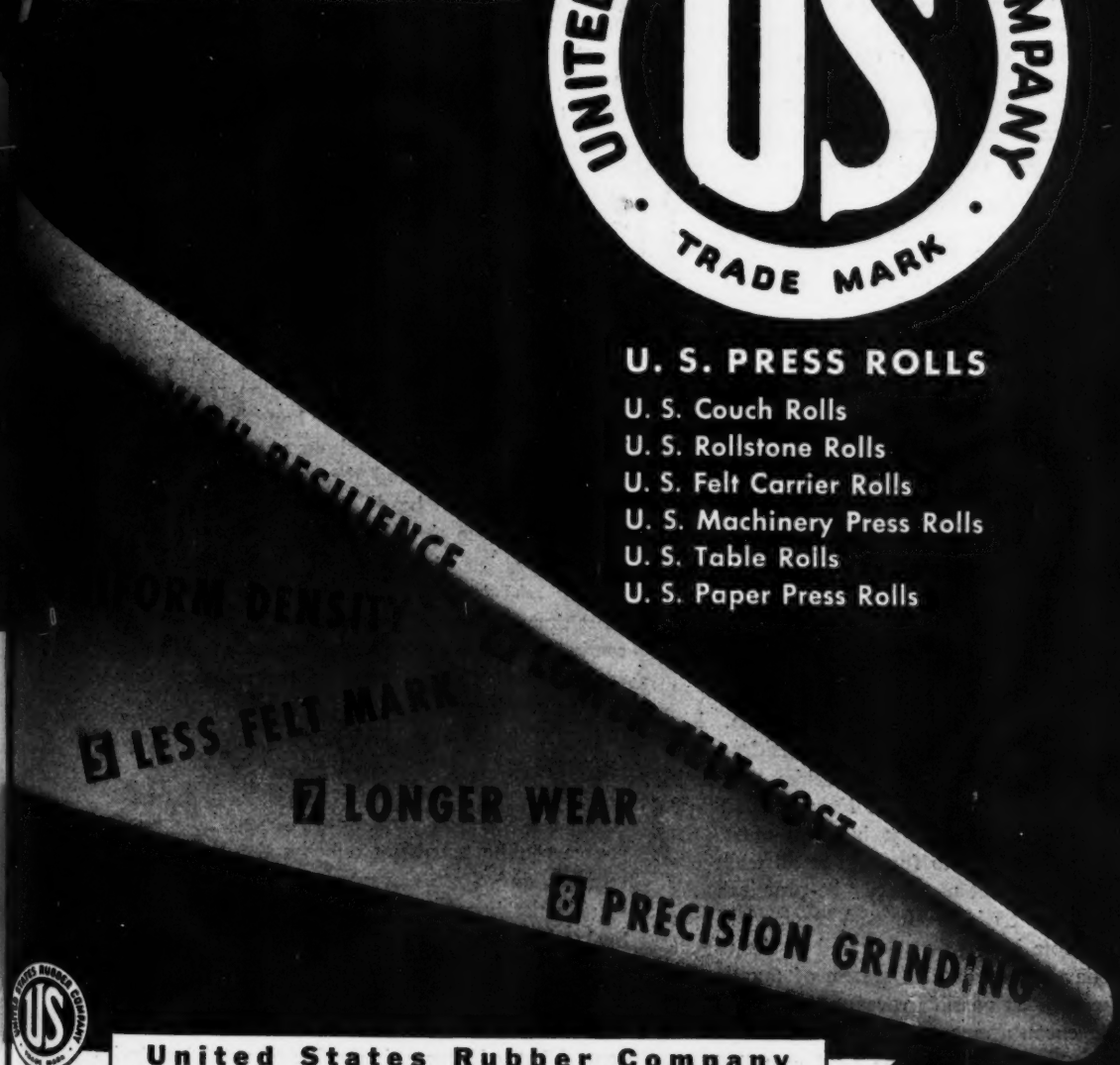

United States Rubber Company

United States Rubber Products, Inc., New York, N. Y.

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COMING EVENTS IN THE PAPER INDUSTRY

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Nonotuck Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—Second Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION, Technical Association of the Pulp and Paper Industry— Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION, Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park-American Hotel, Kalamazoo, Mich.

AMERICAN PULP AND PAPER MILLS SUPERINTENDENTS ASSOCIATION. Annual meeting, Royal York Hotel, Toronto, Ont., June 22-24.

BUSINESS RECOVERY AND TAXATION

Some measure of relief from the burdensome taxes incorporated in the Revenue Act of 1936 seems assured. As President Roosevelt has re-affirmed his faith in the New Deal it also seems certain that experiments in social and economic matters will continue. It is unfortunate for the welfare of the country that business cannot cooperate with the President but this it cannot do until some practical method of procedure comes from the Administration. Big business men have talked with the President and little business men have talked with him and both have failed to cooperate with the New Deal. Why? The reason appears to be that business must proceed on a practical plan to function at all while experimentation need not necessarily be practical. As the minority report of the House Ways and Means Committee wrote into their new tax bill, the urgent need of today is an equitable system of taxation to provide the greatest possible revenue with the greatest possible encouragement to business.

In advocating a return to the 12½ cent limit on capital gains, in effect from 1921 to 1934, the House Ways and Means Committee said in part: "We are of the firm conviction that the greatest need of the hour, and the only thing which will turn our footsteps toward the road to recovery, is continuous, unwavering encouragement to business. The most important and far reaching way in which such encouragement can be given is by relieving business of the restrictions and impediments which this Administration has placed in its way, foremost among which is the present policy of repressive taxation. We of the Republican minority are of the opinion that the cheapest, and in the long run the most productive, investment which the Congress itself would make in relieving the present distressed conditions would be the absolute repeal of the undistributed profits tax and the restoration of the 12½ per cent limit on capital gains."

Another opinion that New Deal policies are the cause of the current recession, was expressed by Bernard M. Baruch in his testimony before the Senate Commitee on Unemployment on February 28. Mr. Baruch traced the present low level of industry and trade to the undistributed profits and capital gains taxes, which had stopped the investment of funds in new enterprises and consequently had prevented solution of the problem of technological unemployment. He asserted that the United States must choose between the profits system and the hope of gain and the new European idea of State regulation and the fear of punishment. He said that "if it becomes clear tomorrow that America has definitely chosen her traditional profits system, forces would be released that would rapidly hasten recovery and re-employment. If on the other hand it continues the influences that have retarded our recent recovery, we may push ourselves and the world to lower levels from which it will be difficult for us or any other nation to rescue them."

In discussing the cause of unemployment Mr. Baruch said that the social security payroll taxes of more than a billion dollars a year was a powerful incentive for employers to substitute machines for workers and thus to increase technological unemployment. He advised that the social security act be re-studied and that a tax on machine hours or even on gross sales, rather than on payrolls, would be more logical.

"In the State of New York," he said, "the same source can be taxed not only by the Federal Government and State Government for income, but if you do not happen to come under the incorporated business, you have to pay an additional 4 per cent unincorporated business tax. Thus the maximum reaches as high as 91 per cent. But with the reduction for State taxes it is between 81½ and 85 per cent. That, of course, is outside of municipal levies and all other taxes. It must be perfectly apparent that nobody will risk much money for the purpose of giving 91 per cent or 60 per cent or even 50 per

cent to the government if he succeeds and cannot charge off his losses if he fails.

"It simply prevents money from going to work to put people to work and to restore the activity which we call prosperity, upon which all rely. No man will use his money except upon a chance of profit commensurate with the risk involved. In our great need of revenue, the tax laws should be designed for increasing employment and revenue and not for revenge, punishment, hatred, regulation or advancement of any social theory. It is my belief that if they were scientifically revised for the two purposes I have mentioned, maximum revenue and maximum recovery, we would make a very great advance.

"There is another field that merits careful study. I refer to death duties. Before I go further, let me say I am not for their repeal. I am not interested in preserving any unearned wealth to a younger generation, my own or others. But I do think our process of suddenly breaking up enterprises and turning them into instant cash, regardless of conditions, should be studied to find a way to prevent the tremendous retardation it imposes on recovery. After a certain point in developing enterprise, curtailment to prepare for death duties sets in. Here we have a law of diminishing development. With the present death duties, practically all classes of America's real estate securities and every other form of asset are for sale. Revision of Federal and State tax structures for maximum business activity and at the same time maximum revenue on the law of diminishing returns requires study. I am not here making specific recommendations except as to principles. But I do believe that an open hearing in a deliberate inquiry by a mixed commission, where economic as well as political tax experts could be heard, could make proposals much improving the present structure and it is hard to excuse our delay in doing that. It is a matter of public concern of pretty nearly first magnitude. If there is such a thing as science in government, this is where it should be applied. The Treasury is no place for the theories of political messiahs."

Simplified Practice for Glassine Bags

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 9, 1938—The Division of Simplified practice of the National Bureau of Standards has announced that the Simplified Practice Recommendation for Glassine Bags, has again been reaffirmed without change by the standing committee of the industry.

This simplification program is concerned with the sizes of flat and square glassine bags for capacities ranging from 1 ounce to 6 pounds, and for a variety of special uses, and represents a reduction in the varieties of such bags from 124 to 26. It became effective October 15, 1931, and was reaffirmed without change in 1935.

Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES

Months	1938(c)	1937(c)	1936	1935	1934
January	63.9%	90.3%	76.1%	65.8%	.....
February	69.0%	90.1%	77.9%	70.0%	.....
March	.....	90.3%	76.0%	70.5%	.....
April	.....	92.1%	82.3%	70.0%	.....
May	.....	90.6%	81.6%	69.4%	.....
June	.....	87.3%	80.7%	72.3%	.....
July	.....	81.8%	77.3%	64.9%	.....
August	.....	82.9%	81.5%	70.9%	.....
September	.....	78.6%	80.5%	71.9%	58.2%
October	.....	73.5%	87.6%	75.6%	64.7%
November	.....	61.9%	88.0%	75.3%	61.7%
December	.....	54.5%	85.9%	71.2%	59.6%
Year Average	.....	80.6%	81.3%	70.5%	.....
Year to Date					
First 8 weeks	66.3%	90.2%	76.9%	67.3%	.....

COMPARATIVE WEEKLY SUMMARIES

CURRENT WEEKS, 1938		CORRESPONDING WEEKS, 1937	
*January 22	66.0%	January 23	88.9%
*January 29	68.1%	January 30	90.1%
*February 5	66.2%	February 6	88.1%
*February 12	67.9%	February 13	90.2%
*February 19	70.2%	February 20	90.4%
*February 26	73.2%	February 27	91.6%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting, Current Weeks					
Ratio Limits	Jan. 22, 1938	Jan. 29, 1938	Feb. 5, 1938	Feb. 12, 1938	Feb. 19, 1938	Feb. 26, 1938
0% to 50%	116	110	111	109	87	63
51% to 100%	197	203	198	199	200	147
Total Mills Reporting	313	313	309	308	287	210

* Subject to revision until all reports are received.
(c) Basic capacity data have been adjusted to correspond with ratings reported by individual companies.

PAPERBOARD OPERATING RATIOS

According to reports from the National Paperboard Association, per cents of operation, based on "Inch-Hours", were as follows:

Mos.	1938 (e)	1937 (e)	1936	1935	Mos.	1938 (e)	1937 (e)	1936	1935
Jan.	55%	80%	61%	61%	July	.....	67%	69%	59%
Feb.	.....	86%	67%	67%	Aug.	.....	74%	75%	65%
Mar.	.....	87%	68%	67%	Sept.	.....	70%	76%	69%
Apr.	.....	89%	70%	61%	Oct.	.....	66%	82%	76%
May	.....	86%	68%	61%	Nov.	.....	56%	79%	70%
June	.....	75%	68%	65%	Dec.	.....	46%	74%	60%

Week end. Jan. 22, 1938—58%
Week end. Jan. 29, 1938—60%
Week end. Feb. 5, 1938—59%
Week end. Feb. 12, 1938—60%
Week end. Feb. 19, 1938—60%
Week end. Feb. 26, 1938—61%

(e) Basic figures revised to include new members of the National Paperboard Assn.

Leslie Paper Co. Reorganizes

Sale of the F. G. Leslie Paper Company of St. Paul to the John Leslie Company of Minneapolis has been announced by officials of the former firm. The St. Paul plant will continue in operation and all employees will be retained, according to the announcement. The concern according to the announcement will be known as the St. Paul division of the John Leslie Paper Company.

F. G. Leslie, head of the St. Paul concern until his death, was a brother of John Leslie, chairman of the board of the John Leslie Paper Company. The latter founded the Minneapolis concern in 1894 and organized the F. G. Leslie Company here in 1903.

The Nassau Paper Company of St. Paul, already owned by the Minneapolis concern, will be merged with the present F. G. Leslie Paper Company.

E. F. Coleman, president of the Leslie Paper Company, and Dabney G. Miller, president of the Nassau Paper Company, will continue with the John Leslie Paper Company in executive capacities.

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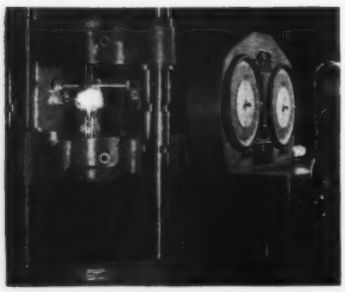

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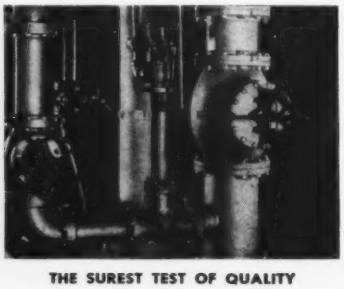
The wrapper may make a cigar look nice. But it takes a high quality, long filler to make it a good smoke. Valves are like good cigars . . . it's what's inside that counts in performance. The more-than-ordinary performance of Crane valves in common use is due to unparalleled experience in designing, uncommon quality of raw materials, unusual care in manufacture, unvarying high standards maintained by the most complete and exacting system of checks and tests of products used in the industry. Install Crane valves and enjoy uncommon valve performance even in valves of common use.



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Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Conductometric Analytical Control in the Direct Causticizing of Soda Black Liquor

By T. R. McElhinney,[1] E. R. Whittemore,[1] and D. F. J. Lynch.[1]

Abstract

1. A modified conductometric titration method and the necessary inexpensive conductometric apparatus are described which offer a rapid, convenient and reasonably accurate analysis of soda black liquor.

2. It is possible to recover a part of the spent soda in a used cook liquor by direct recausticization.

3. As much as 80 per cent of the carbonate present in the solution can be converted to sodium hydroxide by this method.

4. The organic compounds present are not causticized and build up in the liquor, in a closed causticizing cycle, either to a point where they will precipitate out or to a point where their presence will prohibit re-use.

5. Since in a closed system unconverted sodium carbonate will return for a further treatment, direct recausticizing should be operated at maximum lime efficiency.

6. Direct causticizing of the dilute liquors from pulping agricultural waste materials should show a marked economy over the expensive method of evaporation, calcining and causticizing.

7. With direct causticizing the total solids in soda black liquor can be built up to 15 per cent by re-use of the liquors, without injury to the pulp.

Economical operation of the soda pulping process demands that at least 90 per cent of the caustic soda must be recovered for re-use. In standard practice the liquor drained from the pulp is combined with the wash water. This solution—the black liquor—containing about 15 per cent solids, is evaporated to a concentration of 55 per cent, at which point the organic matter present is sufficient to support combustion. The concentrated liquor is sprayed into a furnace and burned. The sodium carbonate formed is dissolved in water and causticized by the addition of slaked lime. The lime sludge (calcium carbonate) is removed by a system of thickeners and the caustic solution, after fortifying with fresh sodium hydroxide, is ready for re-use. Sufficient waste heat is available from the recovery furnace to accomplish most of the necessary evaporation. The actual cost of pulping with sodium hydroxide amounts to the cost of lime used, plus the amortization of equipment, and the cost of the small amount of caustic soda lost in the recovery plant.

There has been criticism of this method of recovery inasmuch as the organic matter destroyed by combustion represents approximately 50 per cent of the weight of the original wood, much of it in the form of valuable by-products. Several methods for the regeneration of the liquor and recovery of these by-products have been suggested. Rinman *(1)* and others have patented various modifications of a process whereby the black liquor is evaporated to dryness and the residue destructively distilled to recover acids, alcohols, tar, gas, etc. The product, a mixture of carbon and sodium carbonate, is leached and the resulting solution causticized and used for further digestion. Bradley and McKeefe *(2)* have patented a process in which the waste soda liquors are treated with a sulphate such as sodium acid sulphate to precipitate the organic material and then the liquor is causticized. Richter *(3)* neutralizes the liquor with sulphuric acid, filters out the organic material and acidifies with sulphur dioxide for further use in acid digestions. McKee *(4)*, Hagglund *(5)*, Schmidt *(6)*, and others have suggested varying treatments all designed to recover as much of the organic material as possible and to minimize the necessary evaporation and calcining.

Application of the soda process to the pulping of cellulosic farm by-products introduces new difficulties into the standard recovery method. Due to the light, bulky nature of these materials and the ease with which they can be pulped, it is necessary to use large volumes of cooking solutions of a low chemical concentration. Even with most efficient washing the spent liquor is so diluted that evaporation is very costly. Obviously, the black liquor cannot be discarded.

A possible solution would be to replace the sodium hydroxide used in a digestion with sufficient fresh sodium hydroxide to bring the liquor back to its original activity, thus making it available for use in subsequent cooks, if the resulting pulps would not become discolored. Re-use of the cooking liquor should increase the organic extract to any desired concentration, presumably to that at which it would be self-evaporating. It is also possible that the build-up might be allowed to continue until recovery of the extracts themselves would be economical. In connection with

[1] U. S. Agricultural By-Products Laboratory, Iowa State College, Ames, Iowa.

this plan, it seems logical that at least a part of the necessary fresh sodium hydroxide could be obtained by directly causticizing the used liquor with lime without resorting to evaporation. If this were possible, there would be an economic advantage. An investigation was made of the feasibility of this plan. Before any worthwhile decision could be made on the effectiveness of direct causticizing, a method had to be devised to determine the extent of the utilization of the caustic soda present and amounts of sodium carbonate and sodium organic salts formed in the digestion. In this investigation, this information was secured by conductometric analysis.

Although the principles of conductometric analysis are well known *(7)* and often used in various analytical procedures *(8)*, the expensive apparatus and tedious procedure commonly employed have discouraged its application in industrial laboratories. Obviously, with clear solutions, titration with indicators is more rapid and convenient. When indicators are used with highly colored solutions, such as a soda black liquor, the end points are obscured, accuracy decreases and duplication of results are impossible. Furthermore, in the case of a spent cook liquor, the presence of different sodium compounds in the solution eliminates the possibility of a differential titration for the determination of sodium hydroxide and sodium carbonate. Investigation indicated that conductometric analysis might be used for the determination of several different compounds in a single operation. For this type of solution, there was developed, therefore, an apparatus and method which eliminate many undesirable features generally encountered in this type of analysis. This method offers rapidity of determination, reasonable accuracy, direct and rapid reading of conductivity, and operation on ordinary 110-v., 60-cy. alternating current with the use of inexpensive instruments.

Conductometric Apparatus and Method

The apparatus, as shown in Fig. 1, consists of two

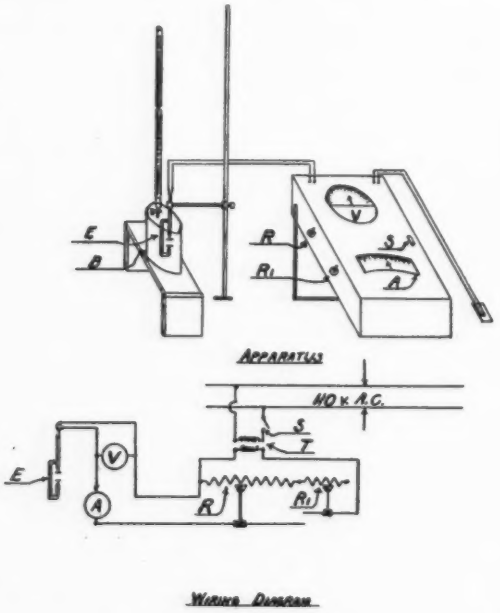

FIG. 1.
Conductometric Titration Apparatus.

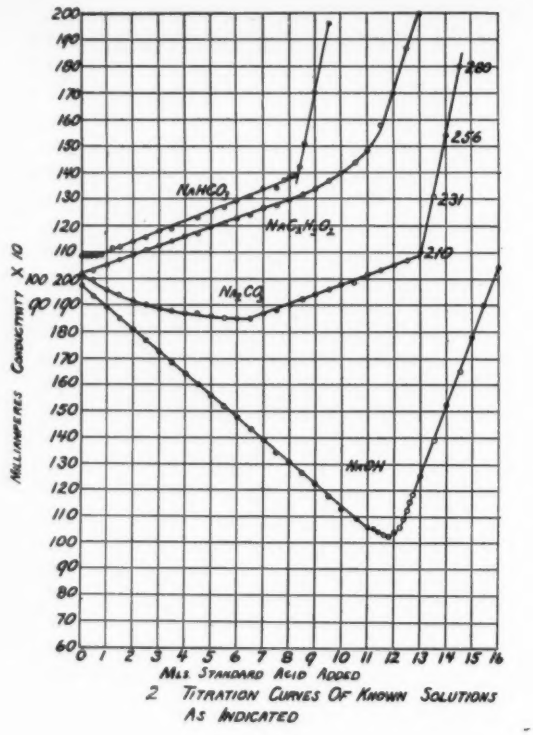

FIG. 2.
Titration Curves of Known Solutions as Indicated.

½-inch platinum electrodes (E) mounted approximately 1½ inches apart in glass, a 110—18 v. doorbell transformer (T), a 500 ohm potentiometer (R) with a 50 ohm resistance slide (R_1) in series for adjusting constant voltage (between six and eight volts depending on the strength of the solution being analyzed), a 15 volt voltmeter (V) and a 30 milli-ampere ammeter (A). Since the resistance of the ammeter varies with the current passing, it is imperative that the voltmeter be so connected as to read only the potential between the electrodes and not the potential of the ammeter. The titration vessel used is a 250-cc. beaker (B), in which an electrically driven stirring rod (not shown in Fig. 1) rotates between the two electrodes. The titrating solution is added from a 50-cc. burette. A switch (S) is used to close the circuit for readings. All electrical equipment, excepting the electrode, is mounted in a convenient case as shown in the drawing. Stainless steel electrodes have been substituted for platinum with only a slight loss in accuracy. The stainless steel selected should, of course, be resistant to the solutions.

Enough boiled distilled water is placed in a beaker to bring the total volume to approximately 200-cc. (The slight conductivity of this water is insufficient to introduce an appreciable error.) A measured volume of the unknown solution is added. The beaker is placed in position, the stirring started and an initial reading taken. Predetermined volumes of the standard hydrochloric acid are added, taking readings at constant voltage after each increment until the titration is completed. The curve is then plotted of milliamperes conductivity against milliliters. From the individual end points indicated by breaks in the curve, percentages of the constituents present can be determined. The accuracy of the determination of small

amounts of constituents present in this installation may be increased by using a larger sample, adding the standard hydrochloric acid until the conductivity is within the range of the instrument and then taking the readings as specified previously. In this way the portion of the curve representing that constituent is magnified. Accuracy is influenced by the size of the sample, by the size of the increments and by the strength of the standard acid. In general, a two to five cc. sample of the unknown is used and the strength of the acid is so adjusted that readings may be made with one-half ml. increments.

Experimental Results

Using this apparatus, known solutions of various sodium compounds appearing in the soda black liquor were titrated conductometrically. Curves obtained for the various constituents, alone or in combination, are shown in Figs. 2 and 3. Table I gives the summarized results of this work. Fig. 2 shows four typical titration curves for known solutions of (1) sodium hydroxide, (2) sodium carbonate, (3) sodium bicarbonate, and (4) sodium acetate. These chemicals are present in soda black liquor. It will be noted that the conductivity of the sodium hydroxide solution decreases rapidly as hydrochloric acid is added until all the sodium hydroxide has been neutralized and increases even more rapidly as the highly ionized excess hydrochloric acid is added. Sodium carbonate it titrated first, with decreasing conductivity, to sodium acid carbonate, then with slowly increasing conductivity to sodium chloride and carbon dioxide. Excess hydrochloric acid, as always, is indicated by a rapidly increasing conductivity. Sodium acetate is indicated by a rising curve to the excess acid point. Sodium bicarbonate is indicated by a rising straight line. The first half of the sodium carbonate present as impurity in the sodium bicarbonate solution is first indicated by an approximately horizontal line. Fig. 3 shows titration curves for mixtures of (1) sodium hydroxide and sodium carbonate, (2) sodium hydroxide, sodium carbonate and sodium acetate, and (3) sodium carbonate and sodium bicarbonate. End points are indicated on the curves themselves.

Although the curves shown are characteristic of these compounds, they are subject to influence by a number of factors in a mixture of chemicals. Factors influencing shape of the curves, but not the end points, are relative percentages of constituents, total strength of solutions, dilutions of samples and voltage maintained during titration. Obviously that part of the sodium hydroxide converted into sodium organic compounds during pulping does not go wholly to sodium acetate. A synthetic mixture of sodium hydroxide, sodium carbonate and sodium acetate, however, gives the typical conductometric black liquor curve. To this synthetic mixture various known

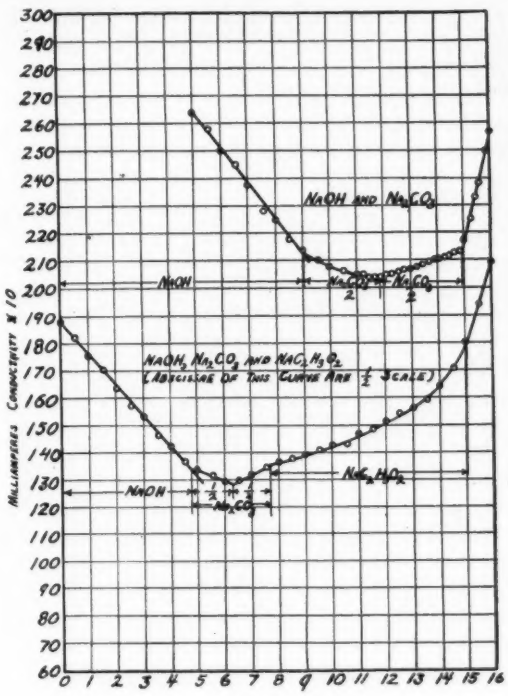

FIG. 3.
Titration Curves of Known Solutions as Indicated.

amounts of sodium hydroxide, sodium carbonate and sodium acetate were added and the conductometric results were as follows:

	NaOH	Na_2CO_3	$Na_2C_2H_3O_2$
Calc.	1.74 grams	6.12 grams	1.586 grams
Found	1.75 grams	6.20 grams	1.61 grams

As a further check on this method, to 100 cc. samples of natural soda black liquor, which, conductometrically, analyzed as containing 0.952 gms. sodium hydroxide, 0.540 gms. of sodium carbonate and 1.685 gms. of organic sodium salts, expressed as sodium acetate, 0.770 gms. of sodium hydroxide, 2.02 gms. of sodium carbonate and 1.58 gms. of sodium acetate were added with the following conductometric results:

	Sodium hydroxide	Sodium carbonate	Organic sodium salts expressed as Sodium acetate
Theory	1.72	2.56	3.26
Found	1.75	2.53	3.43

Having attained reliable results with this modified method, it was selected as the analytical method for the causticizing study. Three typical used caustic liquors were selected as representing three different

TABLE I.—COMPARISON OF CONDUCTOMETRIC AND VOLUMETRIC ANALYSES.

Solution	Gms. NaOH 100 cc.			Gms. Na_2CO_3 100 cc.			Gms. $NaHCO_3$ 100 cc.			Gms. $NaC_2H_3O_2$ 100 cc.		
	Colorimetric	Conductometric	Present	Colorimetric	Conductometric	Present	Colorimetric	Conductometric	Present	Colorimetric	Conductometric	Present
Fig. 2:												
NaOH	1.76	1.75	....	0.088	0.10	....	....	....	....	....	....	....
Na_2CO_3	....	....	....	2.08	2.08	....	....	....	....	....	....	....
$NaHCO_3$	....	....	....	0.238	0.256	....	1.74	1.70	....	....	....	....
$Na_2C_2H_3O_2$	....	....	....	....	....	....	....	....	....	....	0.146	0.142
Fig. 3:												
NaOH + Na_2CO_3	3.04	3.00	3.07	2.35	2.40	2.33	....	....	....	....	....	....
NaOH, Na_2CO_3 + $NaC_2H_3O_2$	....	0.580	0.600	....	0.464	0.484	....	....	....	....	1.75	1.73
Na_2CO_3 + $NaHCO_3$	....	....	....	2.60	2.60	2.59	2.75	2.73	2.80	....	....	....

degrees of "spentness" as indicated by the following analyses.

Liquor	NaOH gms./100 cc.	Na_2CO_3 gms./100 cc.	NaAc equivalent of other Na+ gms./100 cc.
A	0.951	1.601	3.003
B	1.797	1.121	0.805
C	0.302	3.842	1.800

Based on sodium carbonate present, these liquors show theoretical lime demands of 0.765, 0.593 and 1.75 g. per 100 cc. respectively. The lime used was analyzed as 99.23 per cent calcium oxide and 0.77 per cent magnesium oxide.

The three liquors were divided into five portions each, and each of the portions was treated with successively increasing amounts of calcium oxide as shown in Table II. The liquors were heated to boiling under reflux, the predetermined amount of lime added and boiling continued for twenty minutes. The samples were then cooled below the boiling point and filtered while hot. The portions were then analyzed with results as shown in Table II.

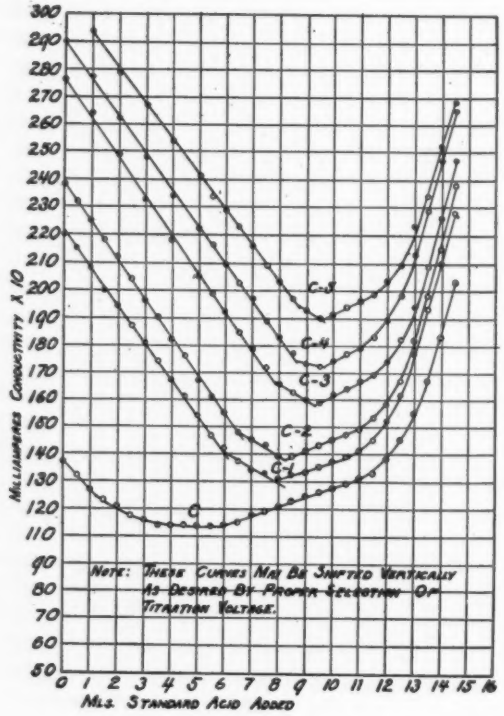

FIG. 4.
Titration Curves of Portions of Liquor C After Varying Lime Treatments.

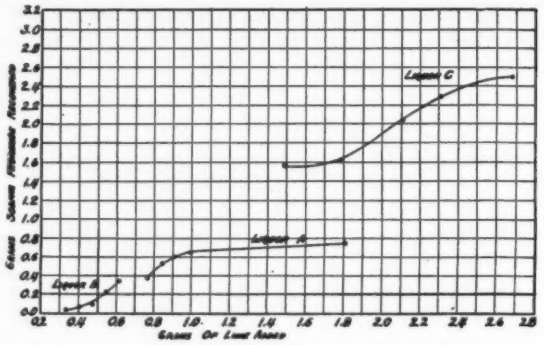

FIG. 5.
Ratio of Chemical Recovered to Chemical Added.

Data: Fig. 4 shows the titration curves for Liquor C in comparison with portions of the same liquor after treatment with successively increasing amounts of lime. The size of sample is the same in each case. Examination of the curves will show the lengthening of the sodium hydroxide line and shortening of the sodium carbonate line. It will also be noted that the portion of the curve representing the organic extract, which is calculated as sodium acetate, remains relatively unchanged. The calculated results are shown in Table II, as are also the results of the treatment of liquors A and B. It can be seen that the efficiency of conversion of spent soda, in the form of sodium carbonate, is highest in those cases in which the ratio of the sodium carbonate to the other sodium salts is the greatest.

By continued use of recausticized soda black liquors obtained from the pulping of bagasse and straw, cook liquors were built up to an approximate total solid content of 15 per cent with no apparent damage to the pulp. The ratio of organic material to sodium salts in this liquor was higher than that encountered in commercial soda black liquor. The increase in organic salts decreases the causticizing efficiency to a point where further direct causticizing proves impractical. It seems possible that at the above concentration either the standard soda recovery method or some treatment to recover the organic compound in this liquor would prove practical. Fig. 5 is a comparison of lime added to sodium hydroxide gained in the several samples. While the ratio is highest in the liquor containing the greatest percentage of original carbonate, it can also be observed that even the poorest results, liquor B, show a good margin of gain, 0.4 g. sodium hydroxide for 0.6 g. calcium oxide.

TABLE II.—ANALYSES OF BLACK LIQUORS BEFORE AND AFTER CAUSTICIZING

Sample No.	Theoretical Lime Required, gms.	Lime Added, gms.	NaOH gms./100 cc.	Na_2CO_3 gms./100 cc.	NaAc Equivalent gms./100 cc.	Total Solids gms./100 cc.	Alkalinity of Ash gms./100 cc.	NaOH Increase gms./100 cc.	NaOH Equivalent of Na_2CO_3 Decrease gms./100 cc.	Discrepancy gms./100 cc.
A	0.846	0.0	0.951	1.601	3.003	...	...	....	....	....
A-1	0.846	0.765	1.329	1.041	3.096	...	...	0.378	0.423	0.045
A-2	0.846	0.842	1.480	.921	3.033	...	...	0.529	0.514	0.015
A-3	0.846	0.918	1.555	.840	3.096	...	...	0.604	0.575	0.029
A-4	0.846	0.995	1.601	.760	3.096	...	...	0.650	0.635	0.015
A-5	0.846	1.810	1.706	.680	3.065	...	...	0.755	0.696	0.069
B	0.593	0.0	1.797	1.121	0.805	...	...	....	....	....
B-1	0.593	0.339	1.842	1.081	0.836	8.04	2.56	0.045	0.031	0.014
B-2	0.593	0.408	1.872	1.001	0.866	...	...	0.075	0.091	0.016
B-3	0.593	0.479	1.888	.880	0.805	...	...	0.091	0.182	0.091
B-4	0.593	0.543	2.023	.800	0.805	...	...	0.226	0.243	0.017
B-5	0.593	0.612	2.069	.760	0.773	7.92	2.50	0.272	0.272	0.0
C	1.75	0.0	0.302	3.842	1.800	....	....	....	....	....
C-1	1.75	1.483	1.857	1.561	1.888	9.34	3.07	1.555	1.710	.155
C-2	1.75	1.785	1.933	1.521	1.857	...	...	1.631	1.755	.124
C-3	1.75	2.111	2.356	1.201	1.733	...	...	2.054	2.000	.054
C-4	1.75	2.313	2.597	.800	1.735	...	...	2.295	2.300	.005
C-5	1.75	2.680	2.612	.760	1.735	9.20	3.11	2.310	2.325	.015

Since sodium hydroxide is approximately seven times as expensive as lime, even these results would appear profitable. Any carbonate not converted in the first operation would remain in the system and be available for further treatment at a higher efficiency after the next pulping run.

As seen in Table II, the sodium acetate equivalent of the organic sodium salts varies a good deal in the different liquors, the difference in some cases being as much as 6 per cent of the total. It should be remembered that this error is the accumulative error of the calculations of sodium hydroxide and sodium carbonate in the solution and should rightly be distributed between the three compounds.

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(2). Bradley and McKeefe. Treating Residual Liquors from Alkali Digestion of Cellulosic Materials. U. S. Patent 1,754,207 (1930).
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Review Of The Paper Industry Literature

Abstracts Compiled By the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson and Clarence J. West, Chairman of the Committee.

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C. for 10 cents each. Send currency, not stamps.

Sulphite Process

The Influence of the Degree of Sulphonation Upon the Sulphite Cooking Process. Erik Haegglund and Sixten Arnold. Svensk Pappers-Tidn. 40, no. 16:387-390 (Aug. 31, 1937); B.I.P.C. 8:83.—When a sulphite cook is interrupted at a sufficiently advanced stage, the digester filled with plain water or salt solutions, and heated, considerable quantities of lignin can be dissolved. It is thus possible to prepare easy bleaching pulps from strong sulphite pulps. However, this cooking method is of little technical interest, because the pulp yield does not increase, whereas the danger of a considerable lowering of the strength properties exists. If the lignin is removed at an early stage before complete sulphonation has taken place, a burnt cook is liable to result. The partially sulphonated lignin resinifies more readily than the completely sulphonated lignin. This first sulphonation is apparently accompanied by the liberation of groups which are otherwise protected from resinification by the sulphite present, and we have probably to deal with an active carbonyl. —C.J.W.

The Chemical Composition of Spruce Knots and Their Behavior in the Sulphite Process. Erik Haegglund and Sten Larsson. Svensk Pappers-Tidn. 40, no. 15:356-360 (Aug. 15, 1937); B.I.P.C. 8:83. The rosin content of spruce knots is exceedingly high, the ether extract amounting to 8.05 per cent and the acetone extract to 7.34 per cent. The lignin amounted to 33 per cent, while the methylene oxide and methoxyl contents were approximately the same as for ordinary wood. The knots differ from normal and compression wood in their chemical composition. The percentage of cellulose is about 30 per cent, while the hemicellulose amounts to 32-33 per cent. The knot fibers are only 1 mm. long and 0.023 mm. wide. The pore formation characteristic for compression wood could not be detected. Knots which have been deresinified by means of acetone can be readily disintegrated. Knots rich in rosin can readily be cooked by a two-stage process employing sodium sulphite in the first stage, and sodium bisulphite and sulphur dioxide in the second stage. The paper prepared from such pulp has very poor strength properties, which must be ascribed to the short fibers rendering a good felting impossible. A normal sulphite cook is not suitable for the knots, the dissolving of the lignosulphonic acid being prevented by the high resin content. Burnt cooks result. The lignin of the knots seems to be similar to ordinary spruce lignin.—C.J.W.

The Use of Pyrites Concentrates in Sulphite Pulp Manufacture. Horace Freeman. Thans, Am. Inst. Chem. Engrs. 33: 180-188 (1937).—The author's first trials on space roasting of flotation sulphide concentrates at Shawinigan Falls in 1927 are mentioned. There followed a commercial installation at St. Maurice Valley Paper mill in 1929. A second commercial installation for pyrites was erected at the St. Lawrence paper mill, Three-Rivers, Quebec, in 1932. The present acid installations, using sulphur in Canadian sulphite mills, are briefly referred to, and the requirements for a satisfactory process using pyrites are described. The necessity for developing high temperature followed by rapid cooling in the manufacture of sulphur dioxide from brimstone or pyrites is emphasized. The construction of the St. Lawrence unit, following these requirements, as it has been operated continuously since 1934, is described. Reference is made to the manner in which slagging and formation of accretions, common to many attempts at flash roasting, have been overcome in this unit. Performance data, showing that the unit is satisfactorily operated with by-products pyrites at high efficiency, is making a satisfactory grade of acid and of sulphite pulp and is giving a yield of steam sufficient to more than cover the operating labor costs of the pyrites system and acid making plant, are supplied.—A.P.-C.

Calorisator Device for Indirect Heating of a Pulp Cooking Liquor Kept at Forced Circulation. E. Brobeck. Swed. pat. 87,758 (April 27, 1934).—Two or more calorisators are used in series.—J.F.O.

New Methods for the Recovery of Sulphur. The

Recovery of Sulphur from Roasting Gases Low in Sulphur Dioxide. Wochbl. Papier fabr. 68, no. 21: 397-98 (May 22, 1937).—The roasting gases low in sulphur dioxide are passed through a mixture of water and xylidine which is subsequently heated to drive off the sulphur dioxide.—J.F.O.

Process for the Recovery of Sulphur from Sulphur Dioxide Gases Through Reduction of the Gas with Carbon, Catalyses and Electrical Filtration. Siemens Lurgi Cottrell Elektrofilter G.m.b.H. Nor. pat. 57,166 (Oct. 9, 1935).—The impurities in the gas resulting from the reduction apparatus are kept away from the catalyses surface by electrical filtration.—J.F.O.

Process for the Recovery of Concentrated Sulphur Dioxide. Metallgesellschaft A.G., Frankfurt a.M. Ger. pat. 645,879 (July 6, 1935).—By careful regulation, the sulphur dioxide is prevented from changing over to sulphur trioxide.—J.F.O.

Rosenblad System for Recovery of Heat and Sulphur Dioxide in the Chemical Wood Pulp Industry. T. Bloomen. Tech. Assoc. Papers 20: 346-348 (June, 1937); Paper Trade J. 105, No. 13: 52-54 (Sept. 23, 1937).—A description of the Rosenblad storage blow-steam condenser system of heat recovery from pulp digesters after completion of the cook.—A.P.-C.

Standard Methods for the Examination of Sulphite Waste Liquors. Fachausschuss U.-A. fuer Faserstoffanalysen. Papier-Fabr. 35, no. 28:283-288 (July 9, 1937).—Methods for determining the following values are given: Qualitative analysis, differentiation between liquors from conifers and deciduous trees; specific weight, relationship between specific weight and dry substance; determinaton of total dry substance, organic substance, residue on ignition, and sulphate ash, heat technological properties of dry substance, products obtained on dry distillation, determination of total sulphur, *p*H, total sulphur dioxide, free sulphur dioxide, organic acids, lime, magnesia, reducing sugar, tannin, freezing point, and viscosity.—C.J.W.

Utilization of Waste Sulphite Liquor. S. A. Fotiev. Tsentral. Nauch.-Issledovatel. Inst. Bumazh. Prom. Materialy 1937, no. 22:43-79; C. A. 31: 7644.—A review of Soviet and foreign experimental and factory procedures in reworking of waste sulphite liquors for the production and uses of ethyl alcohol, acetone, acetic acid, vanillin, leather-tanning extracts, activated charcoal, pigments, printing inks, binding materials for fuel briquets and foundry molds, etc. Forty references.—C.J.W.

Replacement of Imported Tanning Materials by Home Products. L. Masner. Tech. Hlidka Kozeluzska 14:47 (1937); C. A. 31:7283.—Fir bark and sulphite cellulose are available in Czechoslovakia. Sulphite cellulose has been successfully used to replace up to 30 per cent of other tannins in tanning sole leather; a 10 per cent replacement is compulsory in Germany. It may be used to advantage to replace other tannins in retanning (filling). Ash-free sulphite cellulose extracts freed from calcium by adding ammonium sulphate tan much better than those freed from calcium by adding sodium carbonate.—C.J.W.

The Trend in Sulphite Pulping. Andreas Christensen. Pacific Pulp Paper Ind. 11, No. 6, 39-40 (June, 1937).—A review of present-day trends.—A.P.-C.

An Analysis of the Sulphite Acid Making Process. W. H. Swanson. Tech. Assoc. Papers 20: 312-313 (June, 1937); Paper Trade J. 105, No. 10: 38-39 (Sept. 2, 1937).—A discussion of a few basic principles in sulphite acid making.—A. P.-C.

The Solubility of Sulphur Dioxide in Calcium Bisulphite Solutions. Frank H. Conrad and W. L. Beuschlein. Paper Trade J. 105, No. 4: 37-40 (July 22, 1937).—The Duhring relation was applied to a three-phase, three-component system for the determination of the solubility of two components. The experimental data at 15° and 25°C. (*J. Am. Chem Soc.* 56, 2554 (1934)) have been extrapolated for 35° and 50°C., and single solubility determinations at these temperatures add greatly to the reliability of the predictions throughout the pressure range. p-t-z Diagrams ($p = k\ (t - 2\ z)$, where p = sulphur dioxide pressure above the solution, t = g. total sulphur dioxide per 100 g. of water z = g. combined sulphur dioxide as calcium sulphite per 100 g. of water) will describe the system CaO-SO_2-H_2O for the range 5° to 60°C. and total pressure to 1 atmosphere.—A.P.-C.

Pyrites Concentrates in Sulphite Pulp Production. H. Freeman. Can. Chem. Met. 21: 209-210 (1937).—Operations at the St. Lawrence Paper Mills plant at Three-Rivers, Que., are outlined. No difference in the quality of sulphite pulp produced by pyrites as compared with sulphur could be found. The quality of the acid produced is suitable for the production of high-grade bleached sulphite.—A.P.-C.

The Utilization of Kraft Lime Mud for the Preparation of Bisulphite Cooking Liquor. Otto Kress and Eugene H. Williams. Paper Trade J. 104, No. 20: 50-51 (May 20, 1937).—Sulphur dioxide is absorbed by kraft lime mud at a suitable commercial rate to produce bisulphite cooking liquor of normal strength. Sawdust can be used to filter the prepared cooking liquor. Pulp produced from kraft lime mud liquor is comparable to that produced from normal liquor in strength, bleachability, chemical contents, and dyestuffs absorption. A saving on raw material of approximately $0.70 per ton of sulphite may be attained by using kraft lime mud for the preparation of the cooking liquor.—A.P.-C.

Manufacture of Cellulose. H. Dreyfus. Brit. pat. 459,531 (July 10, 1935).—Lignocellulosic material is treated with bisulphite liquor containing only a small proportion of free sulphur dioxide 90° to 120°C. for 80 to 120 hrs., after washing and treating with aqueous caustic soda solution (at a concentration of not more than 5 per cent) at 90° to 130°C. Both the acid and alkaline treatments are carried out under a pressure of not less than 10 atmospheres above the vapor pressure of the liquid at the temperature employed. The product is finally bleached after treating with cold 1 to 20 per cent caustic soda solution, if desired.—A.P.-C.

Pulping Process. Francesco C. Palazzo, César Bouvier, Georges Fouché and Edmond Seguin. Fr. pat. 805,972 (Dec. 4, 1936).—An easy-bleaching pulp is obtained by treating a lignified cellulosic material at 105° to 106°C. for 8 to 18 hrs. with a liquor containing about 6 per cent of free sulphur dioxide and an amount of sodium bisulphite corresponding to 0.13 to 0.15 per cent of sodium oxide. The product is reduced to pulp by the usual mechanical treatments and treated with a current of chlorine, washed with water, heated to 65° to 75°C. with a dilute solution of sodium carbonate and sodium sulphite, washed again and bleached with hypochlorite.—A.P.-C.

Cellulose Delignifying Process and Product Thereof. A. R. de Vains. Fr. pat. 809,844.—Cellulosic material is treated under superatmospheric pressure and at high temperature (130° to 140°C.) with neutral aluminum sulphite or with the double sulphites of aluminum and sodium or potassium.—A.P.-C.

The Camas Circulating System. Anon. Pacific Pulp Paper Ind. 11, No. 7: 26-28 (July, 1937).—A description of the acid-circulating system with which all sulphite digesters at the Camas mill are now equipped.—A.P.-C.

Process for the Manufacture of Pure Cellulose. M. Gunther. Belg. pat. 419,457 (Feb. 27, 1937).—The fibrous raw material is impregnated with the cooking liquor, air is removed by steaming, and the charge is treated with dry, super-heated steam without increase in the water content of the charge.—A.P.-C.

Studies of Spruce Pitch and Its Constituents. Ossian Aschan. Finnish Paper and Timber J. 19, no. 7A:34-326, 328; no. 9:436, 438-439 (April, May 15, 1937); Bull. Inst. Paper Chem. 7:392.—The author extracted a mixture of hard and soft pitch scraped off spruce trees with alcohol, ether, and benzene. The pitch did not give an ester number, indicating that the organic constituents are not combined with one another. Pitch freed from terpenes consists of a crystalline resin acid, a small quantity (2-3 per cent) of fatty acids, and two neutral substances, the one separating from the ether, the other from the benzene extract, both giving the phytosterol reaction. The resin acid occurs in its crystalline and its amorphous, lacetone-like form. Identical quantities of this resin acid could be extracted from green and dried spruce chips, while sulphite pulp, prepared from them, yielded in its place a badly smelling yellowish-brown oil. The neutral benzene extract has a sticky nature; it occurs, however, in too small quantities in the pitch to account for the stickiness of the whole product. This property can probably be traced back to the crystalline resin acid being mixed with very sticky products of the lacetone-like anhydrous form.—C. J. W.

Theory and Calculations for Acid Making. Carl-Robert Sahlberg. Svensk Pappers-Tidn. 40, no. 4: 83-85; no 8:182-183 (Feb. 28, April 15, 1937).—The author presents theoretical considerations and calculations for showing the relationship existing between temperature of recovery and sulphur dioxide content of cooking liquor, and temperature of cooking liquor and sulphur consumption.—C.J.W.

Surface Phenomena in the Production of Paper and Cellulose. VII. Measurement of the Surface Tension as a Method for Assaying the Properties of Resinate Size, Cooking Acid and Sulphite Liquor. I. I. Kovalevskii. Bumazhnaya Prom. 15, no. 1:20-31 (1937); C. A. 31:6460.—The measurement of surface tension as a method for establishing the physico-chemical properties of the highly dispersed systems in the sulphite pulping and paper making processes are discussed. The surface tensions were measured by the methods of the maximum gas bubble pressure of Rebinder and the drop count with the aid of the Traube stalagmometer. A definite relation was shown between the surface activities and the concentrations of resin size, cooking acid and sulphite waste liquor. The work is being continued to ascertain any relation between the composition and surface tension of the waste liquor and pulping acid.—C.J.W.

Pitch Troubles in the Sulphite Industry. Bror Holmberg. Svensk Pappers-Tidn. 40, no. 8:180-182 (April 30, 1937).—The unsaponifiable components of the coniferous extract seem to be the main reason for pitch troubles in the sulphite industry. They seem to consist of non-saturated diterpene alcohols of the formula $C_{20}H_{30}OH$ and are readily autoxized.—C.J.W.

Process for the Preparation of Liquid Sulphur Dioxide with a Maximum Water Content of 22 Per cent. Gebr. Giulini, Ludwigshafen, Germany. Nor. pat 57,246 (May 15, 1935). Aqueous solutions of sulphur dioxide are distilled under increased pressure.—J.F.O.

Process for the Cooking of Sulphite Pulp. Metallgesellschaft A. G. Frankfurt a.M., Germany. Finn. Pat. 17,200 (Sept. 19, 1932). The digestor is filled with the chips and also acid under pressure and then before the cooking a part of the acid is removed causing a vacuum. This allows the cooking to proceed without relieving gas.—J.F.O.

Sulphite Waste Liquor. VI. Herman Friese, Viktor Hoegn and Hans Wille. Ber. 70, no. 5:1072-1079 (May 5, 1937).—Waste liquor is separated into three portions, one soluble in methanol, one soluble in 80 per cent methanol, and one insoluble. An attempt is also made to separate the waste liquor by ultrafiltration. The results show that the solids in sulphite waste liquor consist of three components, namely a highly molecular non-cleavable lignin sulphonic acid, a mixture of sugars, and lignin carbohydrate compounds in which the lignin is sulphonated.—C.J.W.

Studies Concerning the Formation of Vanillin from Lignosulphonic Acid. Olov Alvfeldt and Erik Haegglund. Svensk Pappers-Tidn. 40, no. 10: 236-238 (May 31, 1937); Bull. Inst. Paper Chem. 7:377.—The experimental values obtained in this study indicate that the vanillin yield from spruce lignin increases linearly with increasing degree of sulphonation. No appreciable changes caused by the cations in the sulphonating agent could be noticed; such changes as do occur can probably be traced to small variations in the sulphonating conditions. The study further shows that vanillin can also be separated from sulphonated straw lignin. Under suitable conditions, a vanillin yield can be obtained which is in direct ratio to the degree of sulphonation and of the same order of magnitude as in the case of lignosulphonic acid from spruce. This fact indicates clearly that even straw lignin contains aromatic nuclei.—C.J.W.

Stream Pollution and the Sulphite Industry. W. Silfversparre. Finnish Paper and Timber J. 19, no. 13:562, 564, 566-568, 570-582, 584-588 (July 15, 1937); Bull. Inst. Paper Chem. 8:40.—In a detailed study the author discusses the individual effect of sulphite waste liquor and white water upon the streams or lakes into which they are discharged as well as the combined effect of both wastes. If the effluent contains certain sulphur compounds, hydrogen sulphide will be formed in the bottom water. If this hydrogen sulphide will absorb the oxygen present in the surface water; fish death is likely to occur and the water will have a bad smell. The mixing may occur as a natural consequence of temperature changes during autumn and spring, after sudden storms following calm weather or when the cur-

rent is rapid. The biochemical oxygen demand in winter is so small that the quantity of oxygen present in surface and bottom water is sufficient for both and no hydrogen sulphide will be evolved. Cellulose fiber accumulations at the bottom of the water have also harmful effects, since the author proved in previous studies that Cellulose absorbs oxygen. The presence of cellulose or other organic matter furthers the formation of hydrogen sulphide when sulphur compounds are discharged with the effluents. Methods for recovering sulphur dioxide, sulphur, or hydrogen sulphide automatically from the waste liquor must be developed before stream pollution from this source can be successfully reduced. A number of interesting illustrations, partly photomicrographs, and a bibliography of 47 references are included in the article.—C.J.W.

Plastic Heat-Insulating Composition. Oscar A. Brandt and Duluth Dalenius. U. S. pat. 2,072,081 (March 2, 1937.)—About 40 pounds of blue clay, 15 pounds of flaxseed meal, 22 pounds of green tow and 5 pounds of hemp waste are used with about 10 gal. of sulphite waste liquor. (Cl.106-18.)—A.P.-C.

Ligninsulphonic Acid Molding Compositions and Method of Treating Same. Guy C. Howard and Lloyd T. Sandborn assignors to Marathon Paper Mills Co. U. S. pat. 2,077,884 (April 20, 1937.)—Calcium ligninsulphonate, obtained by treating sulphite waste liquor with lime, is cooked with steam under pressure and used as a molding composition. The plastic properties can be modified by varying the time, temperature and pressure of the steam treatment. (Cl. 18-47.5).—A.P.-C.

Manufacture of Vanillin from Sulphite Waste Liquor and Related Substances Containing Ligninsulphonic Acids. H. Hibbert and G. H. Tomlinson. Brit. pat. 465,708 (Sept. 18, 1936).—Sulphite waste liquor having a density of 1.05 is boiled with 24 per cent caustic soda or heated with 12 per cent of caustic soda at 125 deg. to 160 deg. C. under superatmospheric pressure, and then treated with excess of carbon dioxide, and the vanillin is extracted with benzene or with dichloroethane. Potassium or barium hydroxide also may be used, and the liquor may be concentrated.—A.P.-C.

Water

Chemically Treated Water for the Manufacture of Bleached Sulphite Pulp. Finnish Paper and Timber J. 19, no. 11:514-516; no. 12:536,538-540,-542 (June 15, 30, 1937); Bull. Inst. Paper Chem. 7:443.—The author described the installations for mechanical and chemical water treatment in the bleached sulphite pulp mill at Björneborg, Finland. The raw water is taken from the Kumo River and varies greatly during the seasons, three characteristic periods existing, *a*) when the river is frozen, *b*) during the spring floods and fall rains, and *c*) the in-between periods when the cleanliness of the water depends on the occurrence of rains or similar circumstances. Analyses of the water during the different periods indicated the necessity of water treatment if a high quality bleached pulp was desired and it was decided to employ mechanically treated water for the cooking process and chemically treated water for the washing, screening and drying processes after bleaching. Pressure filters were installed for the mechanical purification; aluminum sulphite and calcium hydroxide are used for the chemical treatment. A number of experiments with different water samples were made, the most important results being: During the flood and rainy periods chemically treated water for washing the bleached pulp is absolutely essential. When the river is frozen the use of such water can be reduced to the final washing. The use of water from the bleaching plant in combination with fresh water reduces the whiteness of the pulp; a mixture of chemically treated and waste water was worse in this respect than a mixture with mechanically filtered water.—C.J.W.

Water Pollution and Wood Working Industries. Finnish Paper and Timber J. 19, no. 7A:349-350, 352-352; no. 9:439-440, 442, 444, 446 (April, May 5, 1937); Bull. Inst. Paper Chem. 7:397.—The article is a summary of studies on water pollution carried out between 1921-36 in Sweden and Finland. It deals with the effects of log floating, sulphite and sulphate waste liquor, waste water from paper and saw mills, and white water on fish life and general conditions. Special attention is drawn to the influence of the natural formation of the polluted lakes, rivers, water falls, etc., on the problem. In conclusion, reference is made to recent American studies and results.—C.J.W.

New Method for Removing the Colored Humic Substances from Drinking and Process Water. Finnish Paper and Timber J. 19, no. 7A:362-363 (April, 1937); Bull. Inst. Paper Chem. 7:400.—Brief reference is made to the Iron-Magno process for removing the humic substances from water. The method is based on the use of a special filter substance (Magnomasse) prepared from calcined dolomite in granular form—C.J.W.

Slime—Its Control in Paper Making by Chlorine and Ammonia. R. Trautschold. Chem. Industries 39: 27-29 (1936).—The advantages of a combined chlorine-ammonia treatment over use of chlorine along in combatting slime in paper mill operation are discussed—A.P.-C.

Quality and Fitness of Savannah, Ga., Deep Wellwater for Manufacture of Pulp and White Paper from Slash Pine. C. H. Herty. J. Am. Water Works Association 28: 1975-1978 (1936).—As a plentiful supply of good water is essential to the pulp industry, a complete survey of the riverwater is urged. The artesian well-water has proved satisfactory, but is probably limited.—A.P.-C.

New Process for the Quick Removal of Water Hardness. R. B. Wochbl. Papier fabr. 68, No. 20: 369 (May 15, 1937).—Water that has been treated with lime, soda and caustic is passed between electrodes which causes the precipitates to settle at once, instead of the usual lengthy settling period.—J.F.O.

The Use of Graphite for Preventing of Boiler Scale. Fr. Wochbl. Papier fabr. 68, No. 20: 369-70 (May 15, 1937).—Finely divided colloidal graphite with great surface action is added to the boiler water to prevent adherence of boiler scale.—J.F.O.

TAPPI Ohio Section Will Meet

The Ohio Section of the Technical Association of the Pulp and Paper Industry will hold a dinner meeting at the Hotel Manchester, Middletown, Ohio, March 19. Dinner at 6:30 P.M. and and the meeting at 7:45 P.M.

The speaker of the evening will be A. E. Montgomery, western manager of the J. O. Ross Engineering Company. The subject will be The Economic Use of Air In Drying, and a general discussion in drying problems will follow his talk.

The Hinde & Dauch Paper Co. Crush Tester*

By Pierre Drewsen[1]

Abstract

A description of the design and operation of a new crush tester.

The instrument described in this article was developed in the Sandusky laboratory of The Hinde & Dauch Paper Company under the direction of the author, in August 1936, immediately after which, a number of duplicate machines were constructed and distributed to the various mills of this Company, and elsewhere.[2]

Our purpose was to make a practical, sturdy, heavy duty instrument of relatively low compression capacity (zero to 350 pound), principally for testing straw corrugating paper and container liner board for stiffness, in the sense of ultimate breakdown strength, in order to control the quality of the product of our paper mills and box plants. Previously, a number of Webb paper and box testers were used, but the gradual wearing out of these instruments plus the fact that they are no longer being manufactured, made it imperative to adopt some other unit.

While designed primarily for the container board and box industry, we believe this testing machine may be of value not only to manufacturers and users of other grades of paper, but for other products where a low capacity compression testing machine could be used.

Experience gained from a number of years of testing straw paper and corrugated container stock indicated that any satisfactory machine adopted for this purpose must possess two essential characteristics: (1), The load recording mechanism must be independent of any machine elements which operate under friction; and (2), Both the plunger and the plate on which the test sample rests, must be free of lateral movement. Without these characteristics, it is difficult to make accurate flat crush determinations on corrugated paper. We were unable to find this combination of characteristics in any machine we investigated, including the Webb tester.

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Waldorf-Astoria Hotel, New York, N. Y., Feb. 21-24, 1938.

[1] Member TAPPI, Chemical Engineer, The Hinde & Dauch Paper Company, Sandusky, Ohio.

[2] At present arrangements are being completed to have Testing Machines, Inc., 460 W. 34th St., New York, N. Y., act as sole sales representatives.

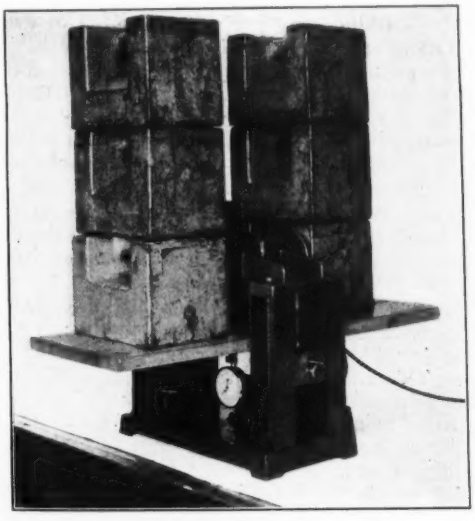

FIG. 1.

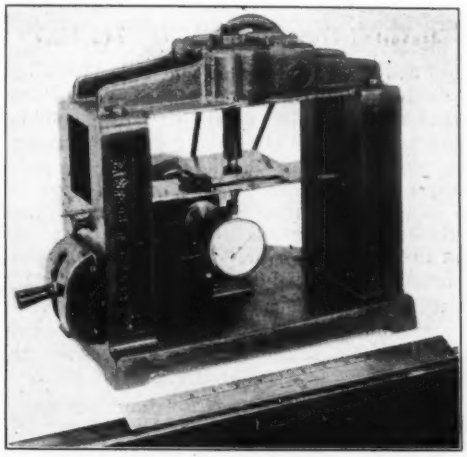

FIG. 2.

A number of devices were tried, among them a platform scale to weigh the breaking load. This was rejected for the reason that the platform of a scale floats and tends to move sideways under pressure. Furthermore, no maximum indicating mechanism can be attached to a Toledo scale pointer without introducing friction which would affect the accuracy of the reading.

The idea adopted was to apply a vertical load on a sample resting on a steel bar and to measure the deflection of the bar at the breaking load. A bar was selected with dimensions such that a load of one pound would cause a deflection of 0.001 inch, this deflection being measured by a gage contacting the bottom of the bar. Because different bars of the same dimensions deflect differently, even when made from the same lot of steel, the shoulders on which the ends of the bar rests were made moveable, lengthwise of the bar, so that the bar deflections can be adjusted to uniformity. A saddle with two V-notch contacts was then adopted as a further improvement so that the sample size would be unimportant, and so that the load would always be applied to the bar at the same points. Lugs under the saddle, nest into two notches in the center of the bar and hold the saddle laterally rigid to prevent any side slip, at the same time permitting the saddle to be lifted out of position when desired.

In other words, the sample is placed on the saddle. As soon as a power driven plunger strikes the sample, the load imparted is immediately transmitted to the bar, which deflects 0.001 inch per pound of load. This deflection registers on the dial of the gage in contact with the bottom of the bar. As soon as break-

age occurs, the bar tends to spring back into its normal position, but the indicated load on the dial remains unchanged, permitting the operator to read it at leisure. The following description with reference to the drawings, Figs. 1 and 2, indicates in greater detail the operation and construction of the instrument.

Detailed Description of the Machine

Figs. 3 and 4 show front and side elevations of the machine as presently constructed. The frame of the machine consists of a base "B", four columns *C*, and a top *T*, all bolted together into a substantially rectangular structure. In the center of the top *T* is a plunger mechanism consisting of a plunger bar *P* which is threaded throughout its entire length. This thread is slotted logitudinally as indicated at *S*. A key in the top frame slides in this slot and prevents the plunger bar from turning sideways. The thread engages the worm operated by the wheel *X* which is direct connected to a pulley driven by a motor *M*. The plunger *A* is a square piece of steel 3½ x 3½ inches, secured to the plunger bar *P* by an integral taper pin. The pulley sizes are so selected that a downward speed of one inch per minute is imparted to the plunger.

The steel bar *D* rests on two steel shoulders *E*, which may be moved lengthwise of the bar by means of the screws *F* by turning the knurled knob *G*. Two steel points *H* with compression spring *J* press down upon the top of the bar substantially above the points at which it rests on the shoulders *E*. The gage *K*, the dial of which is actuated by the stem *L* containing an adjusting nut *Q*, contacts the bottom of bar *D* and records the deflection of the bar when under load. When the load is lifted, the dial on gage *K* maintains its position until the lower adjusting nut *R* is pushed upward. The saddle *U* rests on two wedges *V* on top of the bar and is held in laterally rigid position by means of four lugs which engage the two center notches on the bar. In this way the saddle may be lifted from the bar, but when in position it cannot be moved sideways.

The operating switch, not shown in the drawing, may be seen on the left side of the machine in the photograph.

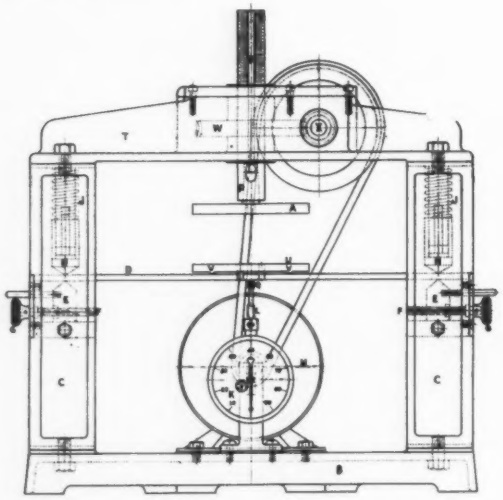

FIG. 3.
Front Elevation

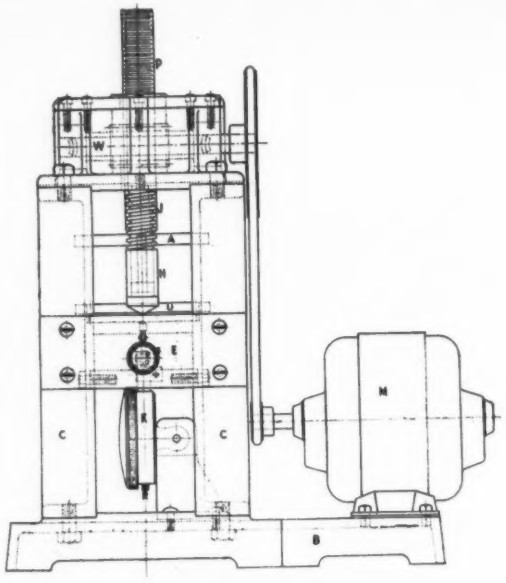

FIG. 4.
Side Elevation

This switch returns to neutral position when the operator's hand is removed and reverses the motor to run the plunger up or down, as desired. The wiring between the switch and motor is concealed under the base *B*.

Adjustment of the Machine

It is evident that the bar and its adjustment is of great importance in obtaining accuracy of results. The adjustment is accomplished in the following manner: First, the belt is removed; then, a plank, which should weigh an even two pounds, is placed sideways on the saddle. The dial should now read 2 pounds. Test weights, for instance 50 pounds each, are then carefully placed on the plank on either side as shown by the photograph. Fig. 4 shows the bar under a load of 302 pounds. If the dial indicates less than 302 under this load, the shoulders *E* are pushed together slightly, by means of adjusting screws *F*, or if it indicates greater than 302, they are pushed apart slightly, until the reading is exactly 302. The weights are then carefully removed and the dial re-adjusted for two pounds if necessary. Should this readjustment be made, the weights are replaced on the plank and the shoulders given a final adjustment, so that the reading is exactly 302. After two such readjustments, or at the most after three, the machine will record accurately from 0 to 300. A more careful check may be made throughout the entire range by using smaller test weights. A new machine should be checked every few days for the first month of operation, after which there appears to be no variation in accuracy. Should there be a slight amount of friction between the bar and the shoulders, a slight hysteresis will show on calibrating the bar up and down. This can be eliminated by removing the cause of the friction which may be, for example, a small amount of paint.

It is obvious that even though no two bars are alike, they may all be adjusted to give correct results In other words, the deflection of a beam under a given load is proportionate to a power of the length This machine makes it possible to adjust the effective

length so that correct deflections obtain, and to check the accuracy quickly, at any time.

The possibility of the steel bars becoming fatigued, and giving incorrect results eventually has received careful consideration. Most of the machines which have been built are being used for control work in paper mills where they are subjected to 24-hour duty for 300 days a year. After a period of over one year's operation, we have noticed no signs of fatigue. However, should fatigue develop, a new steel bar can be substituted for fatigued one on short notice.

Safety Features

The operator must hold his left hand on the switch in order to operate the motor. For this reason there is no danger of the plunger bar running too far either up or down. However, should the motor continue to run the plunger bar up beyond a reasonable point for any reason, the taper pin in the plunger will let go, and the plunger bar will eventually work its way out of the top of the machine and fall out. If the plunger bar continues to run downward beyond the vicinity of 350 pounds pressure, it has been found that the belt slips. Test samples in use in the Container industry are selected so as to give results well below this maximum figure.

Test Samples

Until the various committees, now at work on standard methods of testing container board, corrugated board, and other grades of paper, decide on official methods, any customary test pieces can be used. For testing uncombined paper samples, paper strips 2 x ½ inches, or 6 x ½ inches, coiled into a cylinder and held in place in a circular template are quite satisfactory and can be tested in this machine in the manner well known to the industry. Strip cutters for this purpose are obtainable now from Testing Machines Inc. If desired, stop shoulders can be made integral with the saddle so as to fit the template and center the sample properly. For flat crush tests on single face or double face board, circular samples of 10 square inches area appear to be the simplest to prepare and test. Hess machine Works, Inc., 4951 Lancaster Ave., Philadelphia, Pa., make a cutter of this type. However, rectangular pieces can be used in the same way. If it is desired to use uncoiled strips of flat paper, a special attachment will be required which can be attached to the plunger and to the saddle. The space available and the range of movement of the plunger makes it possible to test any specimen up to a cube 3½ inches on a side.

Acknowledgments

The author acknowledges and expresses his gratitude to the following individuals whose assistance and cooperation made the construction of this testing machine possible: To Herbert T. Nicholas, Mechanical Engineer, The Klotz Machine Company, Sandusky, Ohio, who contributed the principle of the flexing steel bar, and suggested many of the structural elements; to John R. Little, Mechanical Engineer, The Hinde & Dauch Paper Company, for his assistance on the design and development, and for his laboratory work; to Orson Knisely, Mechanical Engineer, The Hinde & Dauch Paper Company, for his preparation of the drawings; and last, but by no means least, to Sidney Frohman, President, and to Joseph W. Harbrecht, Vice President, The Hinde & Dauch Paper Company, for their faith in the project, and for their patience and encouragement.

Properties of Pigmented Bond Papers*

By William R. Willets[1] and Richard T. Bingham[1]

Abstract

During the past few years a number of articles have appeared in the technical literature dealing with the use of titanium pigments in paper manufacture. However, in many cases, these dealt largely with the results of experimental work, and comparatively little has been published dealing with the properties of commercial papers manufactured using titanium pigments.

While it is known that the use of small amounts of titanium pigments will very materially improve the opacity, brightness and printing qualities of any sheet of paper, occasionally the question arises as to what effect these small amounts would have on the strength of the paper. For this reason information has been collected on this point, as pertains to bond-type papers.

In all cases where direct comparisons are drawn, the sheets under consideration were made under as nearly identical conditions as exist in the mills producing such sheets. Naturally, it is impossible to keep all factors of beating, machine operation, etc. constant, so there are always some differences between two runs of paper, and even between different parts of the same run. These points should be borne in mind in considering the data of this report.

Testing

All physical and optical tests were made in a constant humidity room at 50 per cent relative humidity and 70 deg. F.

The Bausch and Lomb Opacimeter was used for all measurements of opacity, using the prescribed method (T425-m-35). This instrument was also used for brightness tests, by determining the reflectance of a pad of several thicknesses of paper (of sufficient opacity that when backed by additional sheets, no difference in reading was obtained). For this purpose a magnesium carbonate block, having a brightness of 98.6 per cent, was used as a standard. While this method may not give "true" brightness readings, it is believed that the comparisons obtained are accurate.

A Perkins Mullen bursting strength tester was used for bursting strength tests (T403-m-36). Where the bursting strength was below 30 pounds per square inch, a gauge of from 0 to 30 pounds capacity was used, for bursting strengths higher than this a gauge reading from 0 to 60 pounds was used. The two gauges checked each other.

A Scott tensile tester was used for the determination of tensile strength, using a dial reading from 0 to 50 pounds. A strip 1 inch wide and 2 inches long

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Waldorf-Astoria Hotel, New York, N. Y., Feb. 21-24, 1938.

[1] Member TAPPI, Paper Development Laboratory, Titanium Pigment Corporation, 99 Hudson Street, New York City, N. Y.

was used. While we appreciate that the strip length was not in accordance with the standard testing method, the small size of the samples prevented the use of a strip of standard length. Here again, however, the results should be comparative.

An Elmendorf tearing tester was used for tearing tests (T414-m-35).

The caliper of the sheets was determined using a Schopper automatic paper micrometer reading to 0.0001 inch (T411-m-36).

Total ash and titanium dioxide contents were determined in the usual way (T413-m-35 and T439-m-36, respectively).

Basis weight was determined using a ream weight scale on sheets of measured area, and the result converted to the weight of a ream, 17 x 22—500 (T410-m-36).

Results

All-Rag Bond

Tests on two groups of samples of 100 per cent rag bonds are given in Table I. Group 1 includes two 13-pound bonds, Group 2, two 20-pound bonds.

TABLE I.—TESTS ON 100 PER CENT RAG CONTENT BONDS

	Group 1		Group 2	
	Unpigmented	Pigmented	Unpigmented	Pigmented
Basis Weight, lbs. (17x22—500)	12.8	13.2	21.0	20.9
Caliper (Mils)	2.4	2.3	3.5	3.6
Ash, per cent	1.48	2.69	1.47	4.35
Titanium Dioxide, per cent	0	1.34	0	2.43
Opacity, per cent	62.3	71.2	81.8	88.5
Brightness, per cent	73.1	76.2	76.2	79.5
Mullen, lbs.	41.0	35.5	48.2	43.7
Tear, Gms., MD	32.4	38.4	83.2	83.2
CD	47.2	42.0	105.2	84.0
Ave.	39.8	40.2	94.2	83.6
Tensile, lbs. (1 inch wide strip) MD	31.4	28.9	33.2	33.5
CD	14.5	15.8	20.2	19.4
Ave.	23.0	22.4	26.7	26.5

In the first group it will be noted that there was an appreciable increase in opacity and brightness resulting from the presence of 1.34 per cent titanium dioxide. There was a decrease in bursting strength, and a slight decrease in tensile strength, but the tearing strength remained practically the same, as did the caliper.

In the second group more titanium dioxide was present, and here losses in bursting and tearing strengths may also be noted, although the tensile strengths were almost identical. The caliper of the two samples was almost identical.

Apparently the bursting strength was most affected, but this may be explained partly by differences in beating, machine operation, etc., as indicated in the next section.

75 Per Cent Rag Bonds

Tests on two 20-pound sheets, one unpigmented and one containing slightly over 1 per cent titanium dioxide, are given in Table II.

TABLE II.—TESTS ON 75 PER CENT RAG CONTENT BONDS

	Group 3	
	Unpigmented	Pigmented
Basis Weight, lbs. (17x22—500)	21.0	21.3
Caliper (Mils)	3.8	3.5
Ash, per cent	1.48	2.43
Titanium Dioxide, per cent	0	1.05
Opacity, per cent	79.0	81.5
Brightness, per cent	72.3	73.8
Mullen, lbs.	48.2	52.8
Tear, Gms., MD	54.8	61.6
CD	66.4	70.8
Ave.	60.6	66.2
Tensile, lbs. (1 inch wide strip) MD	36.8	39.3
CD	21.5	20.6
Ave.	29.2	30.0

In spite of the higher ash content, resulting from the presence of titanium dioxide, the pigmented sheet showed higher strength values in all cases than the unpigmented sheet. The caliper of the pigmented sheet was 0.0003 inch lower than that of the unpigmented sheet. Inasmuch as it is most improbable that an increase in ash content can cause improved strength, it seems logical to assume that the higher strength of the pigmented sheet must have resulted from slight differences in beating, machine operation, etc. In this case, the pigmented sheet was almost as much stronger than the unpigmented, as was the unpigmented than the pigmented in the case of the 20-pound, 100 per cent rag bond discussed above. It might also be noted that the 20-pound, 75 per cent rag bonds had better bursting and tensile strengths, though lower tearing strengths than the corresponding 100 per cent rag bonds.

50 Per Cent Rag Bonds

Four groups of 50 per cent rag bonds were tested, three sets of unpigmented and pigmented 20-pound bonds, and one set of 16-pound bonds. The results are given in Table III.

In Group 4, the paper containing 1.32 per cent titanium dioxide showed slightly lower strength than the pigmented paper. In Group 5, the bursting strengths were similar but the pigmented sheet, containing about 3 per cent titanium dioxide, had slightly lower tensile and tearing strengths. Group 3 had generally lower strength than Group 4. In Group 6 (which had generally higher strength than Group 5) the pigmented sheet had still more titanium dioxide present (about 4 per cent), but the loss of strength was less than in either Group 4 or 5. Here again, differences in beating and machine operation must play a part.

In Group 7, which comprises unpigmented and pigmented (3.81 per cent titanium dioxide) 16-pound bonds, the pigmented sheet showed some loss of bursting strength. Tearing and tensile strengths were affected to a lesser degree.

TABLE III—TESTS ON 50 PER CENT RAG CONTENT BONDS

	Group 4		Group 5		Group 6		Group 7	
	Unpigmented	Pigmented	Unpigmented	Pigmented	Unpigmented	Pigmented	Unpigmented	Pigmented
Basis Weight, lbs. (17x22—500)	20.8	21.8	21.8	20.8	20	20	16	16
Caliper (Mils)	3.5	3.4	4.1	3.9	4.2	4.0	3.3	3.2
Ash, per cent	1.72	2.78	1.09	3.75	0.35	4.23	0.21	4.05
Titanium Dioxde, per cent	0	1.32	0	3.01	0	4.01	0	3.81
Opacity, per cent	78.7	82.4	77.5	86.9	81.6	92.6	74.1	86.4
Brghtness, per cent	72.1	74.9	77.5	85.8	75.7	75.8	75.5	77.1
Mullen, lbs.	47.6	45.5	39.0	39.0	46.4	44.2	41.9	36.4
Tear, Gms., MD	58.4	57.6	58.0	54.4	57.4	54.0	40.6	38.0
CD	68.8	58.8	60.0	58.4	61.0	62.0	47.6	47.2
Ave.	63.6	58.2	59.0	56.4	59.2	58.0	44.1	42.6
Tensile, lbs., (1 inch wide strip) MD	41.4	38.2	38.3	30.9	37.2	36.6	29.7	28.7
CD	18.9	18.5	16.3	17.1	19.5	17.3	16.3	13.3
Ave.	30.2	28.4	27.3	24.0	28.4	27.0	23.0	21.5

In all cases the pigmented sheets had calipers of 0.0001 to 0.0002 inch lower than the unpigmented papers.

25 Per Cent Rag Bonds

One set (Group 8) of 20-pound sheets was tested, the results being given in Table IV. The data are not too directly comparable, as the unpigmented paper was 0.8 pounds higher basis than the pigmented sheet containing 3.7 per cent titanium dioxide. The pigmented sheet showed loss in bursting, tearing and tensile strengths greater than noted in the other groups of papers tested. The caliper was 0.0003 inch lower.

TABLE IV—TESTS ON 25 PER CENT RAG CONTENT BONDS

	Group 8	
	Unpigmented	Pigmented
Basis Weight, lbs. (17x22—500)	21.1	20.3
Caliper (Mils)	4.0	3.7
Ash, per cent	1.05	4.16
Titanium Dioxide, per cent	0	2.91
Opacity, per cent	78.4	90.3
Brightness, per cent	75.5	80.1
Mullen, lbs.	40.8	32.6
Tear, Gms., MD	47.2	51.2
CD	66.4	53.2
Ave.	56.8	52.2
Tensile, lbs. (1 inch wide strip) MD	36.3	29.7
CD	15.6	16.9
Ave.	26.0	23.3

All Sulphite Bonds

Unfortunately, no directly comparable sheets, unpigmented and pigmented, were available in the all-sulphite class. However, two groups of pigmented all-sulphite sheets were tested, and the results are given in Table V. Group 9 represents various weights of one grade, Group 10 of another, made by a different mill. The data are submitted to give some idea of the properties of such sheets. As will be noted, the sheets are all characterized by very high opacity, with good strength.

Discussion

It may reasonably be assumed that the presence of large amounts of filler will affect the strength of a sheet of paper adversely. The reason for this assumption is obvious; if fibrous material having a definite fiber strength together with cohesive properties is replaced by an equal weight of mineral matter, which has no inherent strength, the strength of the resultant filled paper will be less. The loss in strength will be dependent on just how much of the fibrous material is replaced by mineral; in other words the loss in strength should be proportional to the ash content, all other factors being constant.

The data of this report indicate the difficulty in maintaining all the other factors constant, since in one case (Table II) the pigmented sheet actually showed higher strength than the unpigmented sheet, an illogical result. This indicates that manufacturing variations probably play as large a part in affecting strength as the presence of the small amount of ash resulting from the use of titanium dioxide to produce high opacity and brightness. However, if the variations in the factors entering the manufacture of a sheet of paper are taken into consideration, several points are indicated.

Since the loss in strength resulting from a filler will be dependent on the amount of filler added, a sheet made opaque by using a large amount of a low-strength filler will be much weaker than a sheet made opaque by using a small amount of a high strength pigment. In the data reported herein, in no case was it necessary to have a titanium dioxide content of much over 4 per cent to make sheets highly opaque, bright and white. The presence of such small amounts of ash resulted in some cases in a slight loss of strength, in others the difference was within the experimental error involved in manufacture, sampling and testing.

If ordinary fillers had been used in an attempt to obtain the same opacity, the ash content would have been much greater (probably almost 10 times the amount) and it is obvious that such a high ash would result in a very great loss in strength over an unfilled sheet. As a matter of fact, it would be highly impractical, if not impossible, to duplicate the high opacity, whiteness and brightness results obtainable with titanium dioxide in bond papers by using ordinary fillers.

These facts have led to the development of various lines of opaque bond papers by the use of titanium dioxide. Such bonds are finding an extended use, because of high opacity, brightness and whiteness, all attained with only a minimum loss in strength. As has been pointed out in earlier articles, show-through is greatly reduced and printability improved.

Such opaque papers are finding wide usage. Over a year ago, Loring G. Peede *("Paper and Paper Products,"* October 20, 1936) listed over twenty-five applications of opaque papers, including air-mail, contracts and legal documents of all kinds, stock and bond certificates, life insurance policies, sales manuals, maps, advertising of all kinds, both booklet and broadside, financial reports, house organs, etc. Such use is definitely on the increase.

References

For additional information regarding the use of titanium pigments in paper, the reader is referred to the bibliography included in "Titanium Pigments in Paper Making—A Review," *Paper Trade J.*, (May 7, 1936). Since that time, three other articles have appeared: "Titanium Pigments: Their Manufacture, Properties and Use in Paper Making," *Pacific Pulp and Paper Ind.*, (June, 1936); "Titanium Pigments: A Review," *Paper Trade J.*, (November 19, 1936); and "Titanium Pigmented Papers," *Paper Ind.*, (March, 1937).

TABLE V—TYPICAL SULPHITE BONDS CONTAINING TITANIUM DIOXIDE

	Group 9				Group 10		
Basis Weight, lbs. (17x22—500)	12.4	15.9	19.1	22.8	15.7	19.25	23.3
Caliper (Mils)	2.2	2.8	3.2	3.8	3.1	3.6	4.4
Ash, per cent	4.60	6.75	6.94	8.23	11.20	10.82	14.27
Titanium Dioxide, per cent	2.67	3.68	3.74	4.27	6.25	5.52	3.44
Opacity, per cent	82	89.5	93.8	96.9	90.6	94.8	98.0
Brightness, per cent	81.6	81.9	81.2	81.8	81	79.9	77.8
Mullen, lbs.	15.2	20.8	23.9	28.6	18.5	22.9	24.5
Tear, Gms., MD	20.0	22.0	34.0	44.8	36.0	48.0	50.4
CD	22.4	27.6	40.4	56.0	40.0	51.2	58.0
Ave.	21.2	24.8	37.2	50.4	38.0	49.6	54.2
Tensile, lbs. (1 inch wide strip) MD	14.2	21.5	27.8	31.7	18.5	22.7	26.7
CD	8.1	13.4	13.8	16.6	9.2	11.5	8.5
Ave.	11.2	17.5	20.8	24.2	13.9	17.1	17.6

Snap Shots Taken At Savannah TAPPI Reunion, Belmont Plaza, Feb. 22, 1938

PHOTO 1, D. G. MOON, CHIEF ENGINEER OF THE UNION BAG AND PAPER CORP., SAVANNAH, GA., AND CHAIRMAN OF THE GENERAL COMMITTEE OF THE SAVANNAH MEETING AND MRS. MOON. PHOTO 2, MRS. MOON MAKING ADDRESS OF WELCOME AT SAVANNAH REUNION. PHOTO 3, JACOB EDGE, OF THE DOWNINGTOWN MFG. CO., DOWNINGTOWN, PA., AND DAUGHTER ELIZABETH. PHOTO 4, JOHN BROUGHAM, GENERAL SUPERINTENDENT OF PENN-FIBRE BOARD CO., YORK, PA., AND MRS. HAROLD BURROUGHS, WIFE OF HAROLD BURROUGHS OF MANHATTAN RUBBER MFG. DIV., RAYBESTOS-MANHATTAN INC. PHOTOS 5, 6 AND 7, GENERAL VIEWS OF SAVANNAH TAPPI REUNION.

Imports of Paper and Paper Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports, of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

NEW YORK IMPORTS

WEEK ENDING MARCH 5, 1938

SUMMARY

Cigarette paper	462 cs.
Wall paper	4 bls., 24 cs.
Paper hangings	3 bls., 3 cs.
Newsprint	6,432 rolls
Printing paper	1 rolls, 26 cs.
Wripping paper	992 rolls, 66 cs.
Drawing paper	5 cs.
Filter paper	21 cs.
Surface coated paper	158 cs.
Writing paper	5 cs.
Transfer paper	47 cs.
Tissue paper	64 bbls., 5 cs.
Colored paper	7 cs.
Bowl paper	38 bdls.
Straw board	818 bdls., 12 rolls
Paper tubes	53 pkgs.
Miscellaneous paper	8 cs.

CIGARETTE PAPER

R. J. Reynolds Tobacco Co., *Pr. Roosevelt,* Havre, 153 cs.
De Mauduit Paper Corp., *Pr. Roosevelt,* Havre, 222 cs.
Champagne Paper Corp., *Berengaria,* Southampton, 86 cs.
Gluckman & Strauch, *Berengaria,* Southampton, 1 cs.

WALL PAPER

——, *Atutasan Maru,* Yokohama, 3 cs.
——, *Alaunia,* London, 4 bls.
American Express Co., *Toulouse,* Kobe, 2 cs.
Rohner Gehrig & Co., *Berengaria,* Southampton, 4 cs.
——, *Berengaria,* Southampton, 2 cs.
F. Blank, *Washington,* Havre, 12 cs.
P. H. Petry & Co., *Washington,* Havre, 1 cs.

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Jay Madden Corp., *Pr. Roosevelt,* Hamburg, 73 rolls.
Parsons & Wittemore, Inc., *Pr. Roosevelt,* Hamburg, 30 rolls.
Perkins Goodwin & Co., *St. Louis,* Hamburg, 297 rolls.
Jay Madden Corp., *St. Louis,* Hamburg, 480 rolls.
N. Y. Evening Journal, *Markland,* Liverpool, N. S., 192 rolls.
N. Y. Tribune, *Markland,* Liverpool, N. S., 1650 rolls.
World Telegram, *Markland,* Liverpool, N. S., 554 rolls.
Brooklyn Daily Eagle, *Markland,* Liverpool, N. S., 1000 rolls.
Westchester Newspapers, Inc., *Markland,* Liverpool, N. S., 40 rolls.
Jay Madden Corp., *Marissa Thorden,* Hango, 932 rolls.
Lunham & Reeve, Inc., *Marissa Thorden,* Hango, 173 rolls.
Jay Madden Corp., *Scanstates,* Helsingfors, 389 rolls.
Jay Madden Corp., *Washington,* Hamburg, 296 rolls.
N. Y. Evening Journal, *Washington,* Hamburg, 326 rolls.

PRINTING PAPER

Japan Paper Co., *Pr. Roosevelt,* Havre, 15 cs.
——, *American Merchant,* London, 3 cs.
Jay Madden Corp., *Marissa Thorden,* Hango, 1 roll.
S. Bienfang, *Maasdam,* Rotterdam, 5 cs.
R. J. Saunders, *Berengaria,* Southampton, 6 cs.

WRAPPING PAPER

Walker Goulard Plehn Co., *Pr. Roosevelt,* Hamburg, 172 rolls.
Jay Madden Corp., *Pr. Roosevelt,* Hamburg, 823 rolls.
Steiner Paper Corp., *St. Louis,* Hamburg, 58 cs.
Keller Dorian Paper Co., *Excambion,* Marseilles, 6 cs.
Nashua Gummed & Coated Paper Co., *Alaunia,* London, 2 cs. (waxed).

DRAWING PAPER

Schenker & Co., *Pr. Roosevelt,* Hamburg, 1 cs.
H. Reeve Angel & Co., Inc., *Alaunia,* London, 4 cs.

FILTER PAPER

A. Giese & Son, *St. Louis,* Hamburg, 1 cs.
H. Reeve Angel & Co., Inc., *Alaunia,* London, 20 cs.

SURFACE COATED PAPER

Gevaert Co. of America, *Black Tern,* Antwerp, 48 cs.
Gevaert Co. of America, *Pennland,* Antwerp, 110 cs. (unfinished photo-paper).

WRITING PAPER

Globe Shipping Co., *Washington,* Havre, 5 cs.

TRANSFER PAPER

J. H. & G. B. Siebold, Inc., *Pr. Roosevelt,* Hamburg, 11 cs.
J. H. & G. B. Siebold, Inc., *Washington,* Hamburg, 36 cs.

TISSUE PAPER

F. C. Strype, *Pt. Townsville,* Liverpool, 5 cs.
Jay Madden Corp., *Scanstates,* Helsingfors, 64 bbls.

COLORED PAPER

C. H. Asche & Co., Black Tern, Antwerp, 3 cs.
International F'd'g. Co., *St. Louis,* Hamburg, 4 cs.

BOWL PAPER

Hurley Johnson Corp., *Pt. Townsville,* Liverpool, 38 bls.

STRAW BOARD

——, *Bilderdyk,* Rotterdam, 12 rolls.
A. B. Massa Paper Corp., *Maasdam,* Rotterdam, 818 bdls.

PAPER TUBES

——, *St. Louis,* Hamburg, 53 pkgs.

MISCELLANEOUS PAPER

——, *American Merchant,* London, 7 cs.
International F'd'g. Co., *Berengaria,* Southampton, 1 cs.

RAGS, BAGGINGS, ETC.

Manufacturers Trust Co., *Pt. Townsville,* Liverpool, 16 bls. rags.
Hughes Fawcett, Inc., *Caledonia,* Glasgow, 60 bls. flax waste.
Sherwin Bros., *Pennland,* Antwerp, 5 bls., flax waste.
E. J. Keller Co. Inc., *Excambion,* ——, 81 bls. bagging, 96 bls. hessians.
Banco Coml. Italiane Trust Co., *Excambion,* Alexandria, 96 bls. bagging.
Irving Trust Co., *Excambion,* Alexandria, 221 bls. bagging.
W. J. Green, *Excambion,* Alexandria, 69 bls. rags.
Philadelphia Nat'l. Bank, *Excambion,* Alexandria, 210 bls. bagging.
Castle & Overton, Inc., *Excambion,* Alexandria, 334 bls. rags.
——, *Excambion,* Alexandria, 174 bls. rags, 170 bls. bagging.
S. Shapiro & Son, *Olga S.,* Antwerp, 54 bls. rags.

HIDE CUTTINGS

——, *E. Francqui,* Antwerp, 164 bls.

OLD ROPE

Banco Comi. Italiane Trust Co., *Maasdam,* Rotterdam, 132 coils.
———, Caledonia, *Glasgow,* 69 coils.

WOOD PULP

A. Giese & Son, *Bilderdyk,* Rotterdam, 40 bls. wood pulp.
Parsons & Whittemore, Inc., *St. Louis,* Hamburg, 334 bls., wood pulp, 50 tons.
Castle & Overton, Inc., *Marissa Thorden,* Hango, 600 bls., sulphite.
Pulp Sales Corp., *Marissa Thorden,* Hango, 660 bls. sulphate, 2087 bls. sulphite.
Pulp Sales Corp., *Scanstates,* Helsingfors, 825 bls. sulphate, 137 tons.
Pulp Sales Corp., *Scanstates,* Helsingfors, 2711 bls. sulphite, 495 tons.
Lagerloef Trading Co., *Scanstates,* Helsingfors, 2625 bls., sulphate, 525 tons.
Absorbo Beer Pad Co., *Washington,* Hamburg, 153 bls., wood pulp, 16 tons.
Parsons & Whittemore, Inc., *Hamburg,* Hamburg, 500 bls., wood pulp, 75 tons.

WOOD PULP BOARD

Jay Madden Corp., *Scanstates,* Helsingfors, 172 rolls, 66 bls., 75 tons.

BOSTON IMPORTS

WEEK ENDING MARCH 5, 1938

E. Mayer, *Excambion,* Alexandria, 18 bls., rags.

PHILADELPHIA IMPORTS

WEEK ENDING MARCH 5, 1938

———, *Bilderdyk,* Rotterdam, 10 cs. grease-proof paper.
Jay Madden Corp., *Marissa Thorden,* Hango, 76 bbls., tissue paper.
Wilkinson Bros., Inc., *Marissa Thorden,* Hango, 77 rolls newsprint.
J. W. Hampton, Jr., & Co., *Marissa Thorden,* Hango, 320 rolls newsprint.
Pulp Sales Corp., *Marissa Thorden,* Hango, 3661 bls. sulphite.
Lagerloef Trading Co., *Marissa Thorden,* Hango, 3698 bls., sulphite.
Jay Madden Corp., *Scanstates,* Helsingfors, 46 rolls wood pulp boards, 19 tons.
J. W. Hampton, Jr., & Co., *Scanstates,* Helsingfors, 333 rolls newsprint.
Neidich Process Co., *Scanstates,* Helsingfors, 69 bbls. tissue paper.
Pulp Sales Corp., *Scanstates,* Helsingfors, 3048 bls. sulphite, 588 tons.
Pulp Sales Corp., *Scanstates,* Helsingfors, 650 bls. sulphate, 130 tons.
Keer Maurer Co. Inc., *Olga S.,* London, 195 coils old rope.
J. M. Hagy Waste Works, *Olga S.,* Antwerp, 44 bls. rags.

BALTIMORE IMPORTS

WEEK ENDING MARCH 5, 1938

Castle & Overton, Inc., *Black Tern,* Rotterdam, 325 bls., wood pulp, 65 tons.
Castle & Overton, Inc., *Maasdam,* Rotterdam, 1117 bls. wood pulp.
———, *Black Tern,* Antwerp, 41 bls. wrapping paper.
Price & Pierce, Ltd., *Blankaholm,* ———, 210 bls. bleached sulphite.
Price & Pierce, Ltd., *Brosund,* ———, 990 bls. unbleached sulphite.
Price & Pierce, Ltd., *Etna,* ———, 4680 bls. unbleached sulphite.
Price & Pierce, Ltd., *Etna,* ———, 1800 bls. unbleached sulphate.

NORFOLK IMPORTS

WEEK ENDING MARCH 5, 1938

Loumar Textile By Products Co., *Maasdam,* Rotterdam, 227 bls. bagging.
Gottesman & Co., Inc., *Taurus,* Sweden, 3625 bls. bleachable sulphite.
Gottesman & Co., Inc., *Taurus,* Sweden, 73 bls. unbleached sulphite.

NEWPORT NEWS IMPORTS

WEEK ENDING MARCH 5, 1938

Gottesman & Co., Inc., *Etna,* Sweden, 5400 bls. bleachable sulphite.

Volumetric Determination of Cellulose

Alpha-, beta-, and gamma-cellulose are terms used in paper chemistry to designate the analytical fractions of cellulose. The amount of each fraction present varies widely among the various cellulose materials. A high content of alpha-cellulose generally indicates good quality although no such significance for the other fraction has, as yet, been found. The amount of cellulose which can be filtered out of a mixture of the ground material and a solution of sodium hydroxide is a measure of the alpha-cellulose content. Since none of the existing methods for measuring this important quantity is simply applicable to all types of pulps and papers, the National Bureau of Standards developed the modified volumetric method described in J. Research NBS 18, 333 (March 1937) RP 79.

In the January number of the Journal of Research (RP1068), Herbert F. Launer shows that the volumetric method, which is based upon the oxidation of each fraction by dichromate solution, is simple and rapid, not only in the separation of the fractions but also in their estimation. He found that sizing materials, such as rosin, glue, and starch, could be corrected for, and that the effect of materials such as lignin and zinc sulphide could be eliminated without analyzing for them, thereby avoiding extremely tedious and time-consuming determinations.

The method is shown to be applicable to a wide range of materials. The samples analyzed were sulphite pulp and papers made from various materials including No. 1 new white shirt cuttings, a mixture of No. 1 old white rags and bleached colored rags, a mixture of soda and sulphite pulps, a mixture of rags and sulphite pulps, unbleached sulphate pulp, sulphite pulp, and newsprint paper.

The volumetric method, as compared with the gravimetric procedure, has the advantages of greater simplicity, of considerable saving in time, and of requiring a much smaller test specimen.

Separate prints of the article can be ordered from the Superintendent of Documents, price 5 cents.

Goes With Orchard Paper Co.

ST. LOUIS, March 7, 1938—E. A. Wright has become associated in the capacity of city sales manager with the Orchard Paper Company, 3914 North Union Boulevard, St. Louis, Mo. Mr. Wright was, for a number of years, specialty sales manager for the Bemis Bro. Bag Company in Brooklyn and later president of the Wright Bag Company in the same city. For the last year he has been assistant sales research director for the Union Bag & Paper Corp., New York City. Mr. Wright will have full charge of the city sales management in the Orchard Paper Company.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday March 9, 1938.

Demand, in general, is reported in the wholesale paper market as somewhat improved for the current week. As one of the large manufacturers of a varied line of popular grades with extensive distributing facilities put it, business continued to gradually improve; January was about 18 per cent better than last December and in February business was about 10 per cent greater than January. The general tone of the market is good and while sales volume is relatively light in comparison to the heavy volume of last year, paper merchants are generally more optimistic than are merchants in some other lines. According to a recognized authority on conditions in the paper business, the paper industry leads general business by an encouraging margin.

The demand for newsprint is active and regular shipments are moving under contract orders.

The demand for writing papers is reported as improving. Ground wood papers are in moderate demand. The kraft paper market reports that sales volume is picking up and a gradual improvement during the month is expected. The box board market reports less activity for the current week and prices are less firm, with a reduction in prices on several grades.

Chemical Pulp

No noteworthy change in demand or prices is reported in chemical pulp. Conditions are practically the same as have prevailed for some time and little if any change is expected in the immediate future.

Mechanical Pulp

The demand for mechanical pulp continues to be reported as light. No change in demand or prices are reported for this week.

Old Rope and Bagging

The demand for old rope is very light and little business is being done in bagging. Prices remain at prevailing levels with no prospect now in evidence of any immediate change in either demand or prices.

Rags

Very little business is reported in the domestic rag market. Prices of new and old rags are unchanged for the week. The foreign rag market continues inactive and quotations are nominal.

Waste Paper

The demand for all grades of waste paper continues extremely light. No change in prices are reported, with the exception of No. 1 white news, which is higher this week.

Twine

The demand for all grades of twine is slightly lower for this week. Business is on a restricted hand-to-mouth basis. Cotton twine is firmer in conformity with the trend in the price of raw cotton. The price trend of all other grades is downward, with reduction in the prices of all grades, excepting cotton.

Robinson-Patmen: Bans and Privileges

THE ROBINSON-PATMAN ACT. WHAT YOU CAN AND CANNOT DO UNDER THIS LAW. By Wright Patman. The Ronald Press, 15 E. 26th St., New York, 1938. 408 pages, cloth bound. Price $4.50.

Mr. Patman, a member of the House of Representatives, is the co-author of the act which he analyzes and interprets in this book just off the press. The work is designed to clear up two broad misunderstandings that exist. First of all, many executives, through such misunderstanding as to its applications in specific cases, have given up highly profitable arrangements that are entirely permissible. In some cases, on the other hand, practices that are distinct violations are being continued, leaving both buyer and seller open to heavy penalties.

Representative Patman's purpose is "to clarify the intent and scope of the act, establish its function which is to serve rather than to circumscribe business, and define the sound management policies which insure honest operation under the act."

Nearly 400 questions, covering situations and trade practices arising out of all sorts of distributing arrangements, are answered frankly, telling how to operate legally and advantageously under the act's provisions.

A. S. Clark Buys Huntington Plant

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, March 7, 1938.—Alvan S. Clark of this city, president and treasurer of the Clark Manufacturing Company of Merrick avenue, manufacturer of dandy rolls, has bought the land and buildings of the Huntington Paper Company of Huntington, Mass. At present, Mr. Clark declines to announce his plans for the new purchase but states that he has no intention of leaving Holyoke with his dandy roll factory.

May Maintain Pulp Rates from Savannah

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 9, 1938—The Interstate Commerce Commission has handed down a decision in which it has granted authority, on conditions, to establish and maintain a rate on woodpulp, not powdered, in carloads from Savannah, Ga., to Hudson Falls, N. Y., without observing the long and short haul provision of section 4 of the Interstate Commerce Act.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday March 9, 1938.

BLANC FIXE—The prices of blanc fixe continue firm and conform to prevailing quotations. The pulp is quoted at from $42.50 to $45 per ton, in bulk; the powder is offered at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER—The price of bleaching powder is firm and unchanged from prevailing prices. Bleaching powder is quoted at from $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN—The demand for casein is reported on about the level of the preceding week. Prices are fractionally lower on the higher grades for the current week. Domestic standard ground casein is quoted at from 8½ to 10 cents per pound; domestic finely ground at 10 cents per pound; all in bags, car lot quantities.

CAUSTIC SODA—Prices of caustic soda remain firm at prevailing quotations. Solid caustic soda is quoted at from $2.10 to $2.30 per 100 pounds; flake and ground at from $2.50 to $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—The prices of china clay are reported firm and unchanged from prevailing quotations. Imported clay is quoted at from $14.50 to $25 per ton, ship side. Domestic filler clay is quoted at from $6.50 to $12 per ton; coating clay at from $11 to $22 per ton, at mines.

CHLORINE—The price of chlorine is firm and prices are unchanged at prevailing quotations. Chlorine is quoted at $2.15 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The prices of many grades of rosin are substantially lower for the current week. "G" gum rosin is quoted at $4.35; wood rosin at $4.20 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent rosin size is quoted at $2.61 per 100 pounds, f.o.b., shipping point.

SALT CAKE—Prices of salt cake are reported as firm and unchanged at prevailing quotations. Prices range at from $12 to $13.50 per ton; chrome salt cake at from $11 to $12 per ton, f.o.b., shipping point. Imported salt cake is quoted at from $14.50 to $15 per ton, Gulf or Atlantic Seaboard, on dock.

SODA ASH—The prices of soda ash are reported as firm and unchanged from prevailing quotations. Prices on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $.90; in bags, $1.05; and in barrels, $1.35.

STARCH—The prices of corn starch are reported as firm and quotations are unchanged for the current week. Globe pearl is quoted at $2.55 per 100 pounds, in bags, and at $2.80 in barrels. Special paper starch is quoted at $2.65 per 100 pounds, in bags, and at $2.90 in barrels; all prices in car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—The prices of sulphate of alumina continue firm and are unchanged from prevailing quotations. The commercial grades are quoted at from $1.25 to $1.60 per 100 pounds; iron free at from $2 to $2.25 per 100 pounds, in barrels, at works.

SULPHUR—The prices of sulphur continues firm and conform to prevailing quotations. Annual contracts are offered at $18 per long ton, f.o.b., cars at mines. Spot and nearby car lots are quoted at $21 per ton.

TALC—Prices on talc are reported as firm and unchanged from prevailing quotations. Domestic talc is offered at from $15 to $18 per ton, Eastern mines. Imported talc is quoted at from $25 to $40 per ton, on dock.

Market Quotations

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	@	—
Kraft—per cwt.—Delivered Zone A			
No. 1 Northern	$5.25	@	—
Superstandard	5.00	@	—
Northern Standard Wrapping	4.75	@	—
Standard Wrapping	4.50	@	—
Tissues—Per Ream—Carlots			
White No. 1	1.02½	@	—
White No. 1 M. G.	.97½	@	—
White No. 1½	.67½	@	—
White No. 2	.60	@	—
Anti-Tarnish M. G.	.75	@	—
Colored	.87½	@	—
Kraft	.75	@	—
Manila	.60	@	—
Unbl. Toilet, 1 M.	3.40	@	—
Bleached Toilet	5.26	@	—
Paper Towels—			
Unbleached	1.95	@	—
Bleached	2.15	@	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	$8.25	@	$10.25
No. 2 Jute	7.50	@	9.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Boards, per ton—			
News	$30.00	@	$32.50
Chip	32.50	@	—
Sgl. Mla. Lt. Chip.	47.50	@	—
Jute Lined Chip	47.50	@	—
White Pat. Coated	57.50	@	—
Kraft Liners	55.00	@	—
Binders Boards	75.00	@	80.00

The following are representative of distributors' resale prices:—

Rag Content Bonds and Ledgers—
White, Assorted Items,
Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1.	$41.40@$48.50	$42.55@$50.00
100% Rag	32.80@ 38.50	33.95@ 39.75
85% Rag	.....	32.20@ 37.75
75% Rag	24.75@ 29.00	25.90@ 30.50
65% Rag	21.65@ 26.25	22.80@ 27.75
50% Rag	18.70@ 22.75	19.90@ 24.25
25% Rag	15.80@ 19.25	16.95@ 20.75

Regular Colors @ $1.50 cwt. extra.
Heavy Colors @ $3.00 cwt. extra

Sulphite Bonds and Ledgers—
White, Assorted Items,
Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$9.35@$11.50	$10.55@$12.75
No. 2	8.50@ 10.25	9.65@ 11.75
No. 4	7.60@ 9.25	8.80@ 10.75

Regular Colors @ $1.50 cwt. extra.
Heavy Colors @ $3.00 cwt. extra.

Free Sheet Book Papers—
White, Cased Paper,
Delivered in Zone 1:

No. 1 Glossy Coated	$12.15@	$14.25
No. 2 Glossy Coated	10.55@	12.25
No. 3 Glossy Coated	9.35@	11.00
No. 4 Glossy Coated	8.80@	10.50
No. 1 Antique (watermarked)	8.80@	10.50
No. 2 Offset	8.05@	9.50
A Grade E. F.	7.90@	9.50
A Grade S. & S. C.	8.15@	9.75
B Grade E. F.	7.30@	8.75
B Grade S. & S. C.	7.55@	9.00
C Grade E. F.	7.00@	8.50
C Grade S. & S. C.	7.25@	8.75
D Grade E. F.	6.75@	8.25
D Grade S. & S. C.	7.00@	8.50

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	33.00	@	34.00
Dry	38.00	@	40.00
(Delivered)			
No. 1 Domestic and Canadian	27.00	@	32.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	3.00	@	4.15
Prime Qualities—			
Easy-Bleaching Sulphite	2.50	@	3.25
Strong Unbleached Sulphite	2.25	@	2.75
(On Dock, Atlantic Ports)			
Kraft Bleached	3.00	@	4.00
Kraft Light & Strong	2.50	@	3.00
Kraft No. 1	2.25	@	2.75
Kraft No. 2	2.00	@	2.25
(F.o.b. Pulp Mill)			
Kraft Domestic	2.00	@	2.50
(Delivered)			
Soda Bleached	2.90	@	—

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	7.00	@	7.25
Silesias No. 1	5.00	@	5.25
New Unbleached	7.75	@	8.25
Blue Overall	5.50	@	6.00
Fancy	3.00	@	3.10
Washables	2.10	@	2.25
Mixed Khaki Cuttings	3.60	@	3.75
O. D. Khaki Cuttings	4.35	@	4.50

Old Rags

White, No. 1—			
Repacked	3.50	@	3.60
Miscellaneous	2.75	@	3.00
White, No. 2—			
Repacked	2.10	@	2.25
Miscellaneous	1.70	@	1.80
Thirds and Blues—			
Repacked	1.40	@	1.50
Miscellaneous	1.25	@	1.30
Roofing Rags—			
No. 1	1.15	@	1.25
No. 2	.95	@	1.00
No. 3 (bagging)	.65	@	.70
No. 4	.65	@	.70
No. 5A	.65	@	.70

Foreign Rags

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	@	2.20
New Light Silesias	5.50	@	5.75
Light Flannelettes	5.50	@	5.75
New White Cuttings	7.00	@	7.50
New Light Oxford	4.00	@	4.50
New Light Prints	3.00	@	3.25

Old Rags

No. 1 White Linens	7.50	@	8.50
No. 2 White Linens	6.50	@	7.50
No. 3 White Linens	4.50	@	5.50

Most Paper Rolls are bought on the basis of "Utilization Cost." That is why keen buyers standardize on Waldron Rolls. Built to give trouble-free service over a greater number of service hours, they continue to prove most economical to buy and use. Try Waldron Rolls.

OVER A CENTURY OF EXPERIENCE BUILDING PAPER CONVERTING MACHINES

JOHN WALDRON CORPORATION

Main Office and Works: NEW BRUNSWICK, N. J.

Chicago New York Portland, Ore.

Mundt

Perforated Screens For Pulp and Paper Mills

Steel, Copper, Brass
Bronze, Monel Metal
and Other Alloys
Punched for Centrifugal
and Rotary Screens,
Pulp Washers, Drainer
Bottoms, Filter Plates, etc.

Charles Mundt & Sons

68 Fairmount Ave. Jersey City, N. J.

HIGHEST GRADE

CLAYS

PAPER MAKERS IMPORTING CO. INC. EASTON, PENNSYLVANIA, U.S.A.

COATING FILLING

POWDERED

3 LARGE PLANTS TO SERVE USERS OF

SOLVAY

TRADE MARK REG. U. S. PAT. OFF.

Liquid Chlorine

Solvay's new plants make service an important factor to be considered when you place your orders for Liquid Chlorine. Solvay's new Chlorine plant at Hopewell, Va., now quickens deliveries into the Middle Atlantic and Southern States. The Solvay Syracuse plant supplies New England and the Lake Region States. *In 1938 a new Chlorine plant at Baton Rouge, La., will further increase Chlorine service in the South and Southwest!* Write immediately to find out how these new Solvay services will benefit you.

SOLVAY SALES CORPORATION

Alkalies and Chemical Products Manufactured by The Solvay Process Company

40 RECTOR STREET NEW YORK

No. 4 White Linens.	2.25	@	2.35
No. 1 White Cotton.	4.25	@	4.75
No. 2 White Cotton.	3.25	@	3.75
No. 3 White Cotton.	2.50	@	3.00
No. 4 White Cotton.	1.90	@	2.20
Extra Light Prints..	2.00	@	2.40
Ord. Light Prints...	1.75	@	2.15
Med. Light Prints...	1.55	@	1.95
Dutch Blue Cottons..	2.25	@	2.50
French Blue Linens..	3.00	@	—
Checks and Blues...	2.00	@	—
Linsey Garments....	1.90	@	2.00
Dark Cottons.....	1.50	@	1.60
Old Shopperies.....	1.30	@	1.45
New Shopperies.....	1.45	@	1.50
French Blues.....	2.25	@	2.50

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	2.20	@	2.25
Domestic	2.00	@	2.15
Wool Tares, light....	1.50	@	1.75
Wool Tares, heavy..	2.00	@	2.10
Bright Bagging.....	1.60	@	1.70
Manila Rope—			
Foreign	3.00	@	3.25
Domestic	2.75	@	3.00
Jute Threads.....	2.75	@	3.00
Sisal Strings.....	1.75	@	2.00
Mixed Strings.....	.60	@	.70

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.40	@	2.50
Ordinary Hard White No. 1....	1.90	@	2.00
Soft White No. 1..	1.80	@	2.20
Flat Stock—			
Stitchless	.70	@	.80
Overissue Mag.....	.60	@	.70
Solid Flat Book...	.50	@	.55
Crumbled No. 1...	.40	@	.45
Ledger Stock.....	.90	@	.95
New B. B. Chips....	.15	@	.20
Manila—			
New Env. Cut....	1.85	@	2.00
New Cuttings.....	1.50	@	1.60
Old Kraft Machine— Compressed bales..	.70	@	.80
News—			
No. 1 White News	1.25	@	1.30
Strictly Overissue.	.45	@	.50
Strictly Folded....	.30	@	.35
No. 1 Mixed Paper..	.15	@	.20

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.12½	@	.14
White Hemp.....	.13½	@	.15
Fine Polished—			
Fine India.....	.16	@	.18
Unpolished—			
Box	.09	@	—
Paper Makers.....	.08	@	.09½
Tube Rope.....	.10¾	@	.11½
Wall Paper.....	.10¾	@	.11½
Wrapping	.12	@	.14
Soft Fiber Rope...	.10¾	@	.11¼
Cotton	.16	@	.22

(Hard Fiber)

Medium Java.....	.09	@	.10
Mex. Sisal.....	.08½	@	.09½
Manila	.18	@	.25

Domestic	2.25	@	2.50
Sisal Rope.....	1.65	@	1.75
Mixed Rope.....	.50	@	.55
Transmission Rope..	1.00	@	1.25
Soft Jute Ropes.....	1.90	@	2.00
Jute Carpet Threads.	1.00	@	1.50
Gunny Bagging—			
Foreign	2.00	@	2.05
Domestic	1.65	@	1.85
Bleachery Burlap....	3.50	@	4.00
Scrap Burlap—			
Foreign	1.60	@	1.75
Domestic	1.50	@	1.60
Scrap Sisal	1.25	@	1.50
Scrap Sisal for Shredding	1.85	@	2.00
Wool Tares, Heavy.	1.50	@	1.60
New Burlap Cuttings	1.85	@	2.00
Aust. Wool Pouches.	2.75	@	3.00
Heavy baling bagging	1.75	@	1.90
Paper Mill Bagging.	1.50	@	1.60
Bagging No. 2.....	.85	@	1.00

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints.	.03	@	.03¼
New White No.1..	.06¾	@	.07
New White No. 2.	.05	@	.05½
New Light Flannelettes	—	@	.05½
Silesias No. 1.....	.05½	@	.06
New Black Silesias..	.03¾	@	.04
Silesias No. 1			
Soft Unbleached.....	.06¾	@	.07
Blue Cheviots.....	.05½	@	.06
Fancy	.03	@	.03¼
Washable	.02¾	@	.03

Cottons—According to grades—			
Blue overalls.....	.05½	@	.06
New Black, soft...	.03¾	@	.04
Khaki Cuttings.....	.03½	@	.04
O. D. Khaki.....	.04	@	.04¼
Corduroy	.02¾	@	.03
New Canvas.....	.07¼	@	.07½
B.V.D. Cuttings.....	.06¾	@	.07¼

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues.....	1.75	@	2.00
Third and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62½
Black Stockings.....	3.90	@	4.00
Roofing Stock—			
No. 1.....	1.00	@	1.10
No. 2.....	.75	@	.85
No. 3.....	.65	@	.70

Foreign Rags

(F. o. b. Boston)

Dark Cottons.....	1.25	@	1.30
Dutch Blues.....	2.75	@	2.90
New Checks and Blues	2.85	@	3.00
Old Fustians.....	2.50	@	2.60
Old Linsey garments.	1.75	@	1.90
New Silesias.....	6.00	@	6.50

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1.	.06	@	.06½
New White, No. 2.	.04	@	.04½
Light Silesias.....	—	@	.05
Silesias, No. 1....	—	@	.05
Black Silesias, soft.	.03	@	.03½
New Unbleached..	—	@	.06
Washable, No. 1..	.01½	@	.01¾
Blue Overall.....	.04	@	.04½
Cottons—According to grades—			
Washable, No. 2..	.01¼	@	.01½
New Blue.....	.01¼	@	.01½
Fancy Percales....	—	@	.03
New Black Soft...	.03	@	.03½
New Light Seconds	—	@	.05
New Dark Seconds	.75	@	1.00
Khaki Cuttings—			
No. 1 O. D.....	.03½	@	.04
No. 2 Mixed.....	—	@	.03¾
Corduroy	—	@	.02
New Canvas.....	.05½	@	.06
New Black Mixed.	.02½	@	.02¾

Domestic Rags (Old)

White No. 1—			
Repacked	2.50	@	3.00
Miscellaneous	2.25	@	2.50
Thirds and Blues—			
Miscellaneous	1.25	@	1.50
Repacked	1.50	@	1.75
Black Stockings (Export)	3.00	@	3.50
Roofing Stock—			
Foreign No. 1....	—	@	.75
Domestic No. 1...	—	@	.75
Domestic No. 2...	.65	@	.75
Roofing Bagging..	.80	@	.90

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.75	@	—
Domestic	1.70	@	1.75
Manila Rope.....	3.00	@	3.25
Sisal Rope.....	1.75	@	2.00
Mixed Rope.....	.75	@	1.00
Scrap—			
No. 1.....	1.50	@	—
No. 2.....	1.00	@	1.25
Wool Tares, heavy..	3.25	@	3.50
Mixed Strings.....	1.00	@	1.10
No. 1 New Light Burlap	3.00	@	3.50
New Burlap Cuttings	2.00	@	2.25

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White.	2.35	@	2.40
No. 2 Hard White.	2.00	@	2.10
No. 1 Soft White..	2.00	@	2.10
No. 2 Soft White..	1.40	@	1.50
No. 1 Mixed.....	.70	@	.75
Solid Ledger Stock..	1.50	@	1.60
Ledger Stock, white.	1.25	@	1.30
Ledger Stock, colored	.85	@	.90
No. 1 Books, heavy..	.85	@	.90
Manila Cuttings.....	1.50	@	1.75
Print Manila.....	.45	@	.50
Container Manila....	—	@	.40
Kraft Paper.....	.90	@	.95
No. 1 Mixed Paper..	.25	@	.30
Straw Board Chip...	.25	@	.30
Binders Board Chip.	.25	@	.30
Corrugated Board...	.50	@	.55
Overissue News.....	.55	@	.60
Old Newspapers	.30	@	.35

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White.	2.25	@	2.40
No. 1 Soft White..	1.85	@	2.15
No. 2 Mixed.....	.75	@	.80
Solid Ledger Books..	1.50	@	1.75
Overissue Ledger Stock	1.30	@	1.50
Mixed Ledgers.....	.85	@	.90
No. 1 Books, heavy..	.65	@	.75
No. 1 Books, light...	.65	@	.75
Crumpled Stitchless Book Stock.....	.55	@	.60
Manila Env. Cuttings	1.60	@	1.70
Manila Envelope Cuttings, extra quality	2.00	@	2.10
No. 1 Old Manila....	.85	@	.95
White Blank News..	1.30	@	1.40
No. 1 Kraft.....	.90	@	1.00
Mixed Papers	.10	@	.15
Print Manila.....	.45	@	.50
Container Manilas...	.27½	@	—
Old Newspapers.....	.30	@	.35
Paper Wool Strings.	—	@	.60
Overissue News.....	.45	@	.50
Box Board Chips....	.20	@	.25
Corrugated Boxes...	.30	@	.35
Kraft corrugated boxes	.60	@	.65
Screenings wrappers.	.45	@	.50

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	2.25	@	2.50

CHICAGO

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings....	3.15	@	3.25
No. 1 Hard White.	2.50	@	2.60
No. 1 Soft White..	2.05	@	2.10
Ledger & Writings..	1.30	@	1.40
Solid Books.....	1.20	@	1.25
Blanks	1.40	@	1.50
Krafts	.90	@	1.00
New Kraft Cuts.....	1.70	@	1.80
Manila Env. Cuts...	2.15	@	2.25
Ex. No. 1 Manila...	2.15	@	2.25
Print Manila.....	1.70	@	1.80
Overissue News.....	.60	@	.70
Old Newspapers—			
No. 1 Folded News	.45	@	.50
No. 1 Mixed Paper	.35	@	.40
Roofing Stocks—			
No. 1.....	2.00	@	2.10
No. 2.....	1.85	@	2.00

TORONTO

Paper

Bonds and Ledgers

Delivered

No. 1 White	.35½	@	.36½
No. 1 Tints	.36½	@	.37½
No. 2 White	.26½	@	—
No. 2 Tints	.27½	@	—
No. 4 White	—	@	.1550
No. 4 Tints	.16	@	.1650
No. 5 Bond—White .	11.35	@	—
No. 5 Bond—Tints .	12.35	@	—
No. 5 Bond—Golden Rod	13.35	@	—
No. 5 Ledger—White .	.1185	@	—
No. 5 Ledger—Tints.	.1285	@	—
No. 6 Bond—White .	10.75	@	—
No. 6 Bond—Tints .	11.25	@	—
No. 6 Bond—Golden Rod	12.75	@	—
No. 7 Bond—White .	9.10	@	—
No. 7 Bond—Tints .	9.60	@	—
No. 7 Bond—Golden Rod	11.10	@	—
Book—			
No. 1 M. F.	7.10	@	7.35
No. 2 M. F.	6.85	@	7.20
No. 3 M. F.	5.60	@	6.20
No. 1 S. C.	7.60	@	7.85
No. 2 S. C.	7.10	@	7.35
No. 3 S. C.	6.10	@	6.35
No. 1 Coated and Litho	12.50	@	—
No. 2 Coated and Litho	11.00	@	—
No. 3 Coated and Litho	9.50	@	10.00
Coated tinted.....	13.00	@	13.50
Wrapping—delivered—			
Rag Brown.....	4.85	@	5.55
White Wrap.....	4.00	@	—
"B" Manila.....	4.90	@	6.25
No. 1 Manila.....	5.50	@	7.00
Fiber	5.50	@	—
Kraft, No. 2.....	5.50	@	—

(F. o. b. Cars, Toronto)

News, per ton—			
Rolls (contract)..$46.00		@	—
Sheets 54.00		@	—

Pulp

Ground wood.....30.00		@	—
Unbleached Sulphite.54.00		@	—
Book (Class 1).....64.00		@	—
Writing (Class 2)...62.00		@	—
Select (Class 3).....63.00		@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut...	2.50	@	—
Soft White.....	2.15	@	—
White Blk. News..	1.25	@	1.40
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.00	@	—
Light and Crumpled Book Stock.	.85	@	—
Ledgers and Writings	1.20	@	—
Manilas—			
New Manila Cut...	1.35	@	—
Printed Manilas...	.55	@	—
Kraft	1.00	@	1.30
News and Scrap—			
Strictly Overissue.	.65	@	—
Strictly Folded....	.60	@	—
No. 1 Mixed Paper..	.50	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.06¾	@	.07
Fancy Shirt Cuttings	.02½	@	.03¼